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CONTENTS

THE REMAGEN BRIDGEHEAD ---- Lt. Col. J. H. Montgomery, Jr., *Inf* 3
AIRBORNE ASSAULT IN NORMANDY ---- Gordon A. Harrison 8
THE ROLE OF ELECTRONICS IN WARFARE ---- Lt. Col. H. H. Rogers, *Inf* 23
NEED A TRAINING FILM? ---- Col. W. W. Jervey, *Sig C* 28
THE STRATEGIC IMPORTANCE OF WESTERN EUROPE ---- F. O. Miksche 34
DEMOBILIZATION PROBLEMS OF WORLD WAR II ---- Lt. Col. H. H. Andrae, *Inf* 42
CORPS DEFENSE ON A BROAD FRONT ---- Lt. Col. E. M. Postlethwait, *Inf* 50
WHAT HAPPENED? ---- Lt. Col. W. T. Kerwin, Jr., *FA* 57
MILITARY NOTES AROUND THE WORLD ---- 63
FOREIGN MILITARY DIGESTS ---- 73
The Strategic Importance of Oil ---- 73
Are Commandos Really Necessary? ---- 79
The World Situation Through Russian Eyes ---- 81
Mercenaries ---- 85
Reflections on World War II ---- 88
To the Roof of the World: Spitsbergen ---- 94
Infantry Tactics ---- 97
The Strategic Air Coup ---- 101
Strategic Intelligence ---- 105
BOOKS FOR THE MILITARY READER ---- 111

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THE REMAGEN BRIDGEHEAD

Lieutenant Colonel John H. Montgomery, Jr., *Infantry*
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ON 7 March 1945, a task force from the 9th Armored Division seized a bridge over the Rhine River at Remagen. This hoped for, but unexpected, feat set up a chain reaction which caused all echelons of command from the task force to supreme headquarters to change their plans drastically.

This fortune of war and its capitalization by the various headquarters concerned furnish the military student with an excellent example of flexibility and successful exploitation in war. In order to understand the factors involved and the situation as it existed on 7 March, it is necessary to look back to the end of the preceding month and to consider the scheme of maneuver as conceived by III Corps, to which the 9th Armored Division was attached.

From the Roer to the Rhine (25 February-7 March)

On 25 February, the divisions of III Corps started crossing the Roer River. By 1 March, all divisions were across the River and were pushing to the east against moderate resistance with the mission of advancing to the Rhine. During the night of 5-6 March, First Army moved the III Corps northern boundary to the south and issued instructions which turned the direction of attack to the southeast with consequent changes in division boundaries and objectives. By 7 March, III Corps was fully committed to its new course of action. The 1st Infantry Division on the north was approaching Bonn. The 9th Infantry Division, also pushing east, was nearing Bad Godesburg, Oberbachum, and Berkum. The 9th Armored Division on the east and the 78th Infantry Division on the west were driving south to clear the west bank of the Rhine and to seize crossings over the Ahr River in order to effect a junction with the Third Army (see map). Thus, we see that on 7 March all four of the divisions of III Corps were being employed. Furthermore, fighting a disorganized enemy, all the divisions were deployed on wide fronts and were approaching their final objectives. These factors contributed to a situation in which none of the divisions were immediately available for employment in a bridgehead.

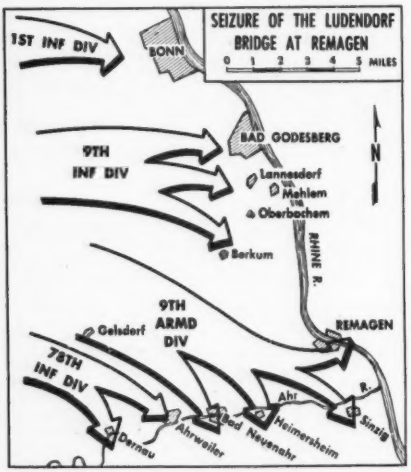
Seizure of the Ludendorf Bridge

While it had not been expected that a bridge over the Rhine River would be seized intact, the possibility had been considered at the various echelons of command. On 6 March, III Corps had requested

When a 9th Armored Division task force seized intact a bridge over the Rhine at Remagen, the feat sparked a series of command decisions which resulted in a classic example of flexibility and exploitation

that Rhine River bridges in the Corps zone not be bombed, although no objection was made to attacks on ferry sites, ponton bridges, or ferries. However, when Task Force Engeman of Combat Command B, 9th Armored Division, broke out of the woods onto the bluffs overlooking the Rhine at Remagen, no orders to cross the River had been issued by anyone. Nevertheless, the task force assaulted the bridge and was able to put three armored infantry companies across by 1600.

There are very few places along the



whole stretch of the Rhine River less suited for a large-scale river crossing than the Remagen bridge site. From a terrain viewpoint, the bridge was located on the north shoulder of a shallow salient that projected into the enemy side of the river. The ground on the east bank rose precipitously from the river and continued rising through rough wooded hills for 5,500 yards inland. The primary road net on the east bank consisted of a road alongside and parallel to the River, and two mountain roads, all of which could be easily blocked. On the west bank of the River, there was but one primary road running into Remagen, and that road did not approach the normal axis of supply. In considering the logistical situation, there had been no build-up of equipment and supplies in the area to support a river crossing, nor, in view of the over-all plan, was there any assurance of getting such supplies. In addition, the bridge was located on the south flank of the Army.

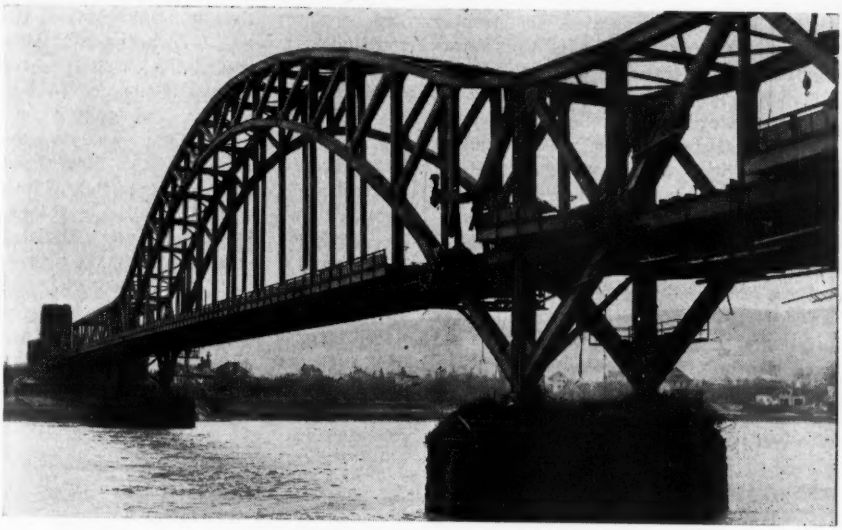
Operationally, the situation certainly did not favor a major effort across such a formidable obstacle at that time. All major units in the vicinity had been committed and were engaged. The Corps artillery had displaced to the south. The communication net had likewise been established to the south. There were insufficient antiaircraft and engineer units at hand to support the operation. The bridge had been damaged by demolitions just prior to its capture, and there was insufficient material available to build another should the bridge collapse. Perhaps most important of all, III Corps was still charged with seizing and holding bridgeheads over the Ahr River.

Perhaps the most important observation that could be made on the whole operation is that each echelon of command did something positive to exploit the possibilities of the situation, and that this was indicative of a high degree of initiative and flexibility of mind on the part of all commanders concerned.

The Build-Up

The first news of the seizure of the bridge was received by III Corps at 071700 March, when the 9th Armored Division notified Corps of the seizure and asked for instructions. III Corps ordered the division to "exploit the bridgehead as far as possible but to hold Sinzig" to the south.

The major problem at this time was the limited number of troops available for immediate employment in the bridgehead.



The Ludendorf Bridge at Remagen (above) was an unexpected prize of war which fell to American troops on 7 March 1945. Although under attack by the Germans, the bridge was exploited to the fullest to build up a bridgehead across the Rhine. The bridge collapsed on 17 March (below), but the crossing was successfully defended.—US Army photos.

As has already been stated, the greater part of every division in III Corps was engaged at this time. In order to commit a division east of the Rhine, it would have been necessary first to relieve it from its assigned mission. Such relief requires time. While it would have been more desirable to employ a complete division in order to maintain integrity of organization and command, the only course of action possible at the time was the expedient of committing infantry units as they became available. In order to achieve effective control and command, it was decided that all units crossing the River would be attached to Combat Command B, 9th Armored Division. In conformance with this policy, the 47th Regimental Combat Team from the 9th Infantry Division were attached to Combat Command B at 072100 March.

While these instructions were being issued and plans made, First Army was notified of the day's developments. Army approved the decision to exploit the bridgehead and further informed III Corps that the 7th Armored Division was attached to III Corps immediately and that elements of the 2d Infantry Division would relieve the 78th Infantry Division and Combat Command A, 9th Armored Division, as soon as possible in order to permit those two units to cross. First Army also immediately furnished III Corps with an antiaircraft 90-mm gun battalion, a treadway bridge company, and a DUKW company. The attachment of these units solved the most pressing of the immediate problems and permitted III Corps to begin the build-up of the bridgehead.

On 8 March, the following units from three divisions were moved across the Rhine: the 52d Armored Infantry Battalion and 14th Tank Battalion of the 9th Armored Division; the 47th Infantry and 1st Battalion 60th Infantry of the 9th Infantry Division; and the 311th Infantry and 1st Battalion 310th Infantry of the 78th Infantry Division. On 9 March, the remainder of the 60th Infantry of the 9th Infantry Division and the 309th Infantry of the 78th Infantry Division moved into the bridgehead and the Commanding General, 9th Infantry Division, was directed to assume command of the bridgehead force. On 10 March, both the 9th and 78th Infantry Divisions closed on the east bank. On 11 March, the 99th Infantry Division crossed and took over a zone in the bridgehead. The initial employment of the various units as they arrived in the area permitted the parent units later to take over zones with a minimum of reshuffling. Thus, we see that in 4 days three and a half divisions were moved into the bridgehead.

Enemy resistance was relatively light for the first 2 days of the operation, but on 9 March, resistance stiffened considerably as the 11th *Panzer Division* was identified on the front. From then until 24 March, the fighting through rugged, wooded terrain was extremely difficult, and ground was gained slowly against a determined, stubborn enemy. On 11 March, the 106th *Panzer Brigade* was identified, and the following day two battle groups of the 130th *Panzer Division* were located on the front. These units made their presence felt by launching 13 tank-supported counterattacks between 10 and 12 March. On the south, the 272d and 277th *Volksgrenadier Divisions* were identified on 12 March, while the next day the 62d *Volksgrenadier* and 9th *Panzer Divisions* were contacted. Thereafter, elements of new divisions were identified almost daily, but these late arrivals were so understrength and disorganized that they did not greatly influence the battle.

By 22 March, the bridgehead ceased to exist as such, since it had become an army front from which the First Army could debouch on its final drive to the heart of Germany.

Protection of the Bridges

On 10 March, a treadway bridge was completed across the Rhine and on the following day a ponton bridge was completed. * During the early days of the operation, a great amount of the German effort was expended in attempting to destroy the bridges. Altogether, the bridge site was subjected to a total of 383 air strikes, 6 V-2 attacks, assault by underwater swimmers, fire from a 540-mm gun, and almost continuous heavy artillery shelling. All of the bridges were hit at one time or another during the operation, and the Ludendorf Bridge collapsed on 17 March as a result of the punishment it had taken.

In spite of the loss of the railroad bridge, the defenses were successful—bridges were maintained across the River. Within a few days after the seizure of the Ludendorf Bridge, a total of 9 antiaircraft automatic weapons battalions and 4 antiaircraft gun battalions were in position protecting the bridge site. Barrage balloons were set up and continuous air cover was maintained. Contact, log, and net booms were constructed across the River to intercept waterborne objects. Twelve depth charges per hour were dropped each night to defeat underwater swimmers. Radar searched the river to detect underwater craft. Twenty-four hour boat and shore patrols were maintained. High velocity guns were emplaced along the banks to fire on any suspicious objects, and at night searchlights illuminated the surface.

Traffic Control

In any river crossing, the problem of traffic control is of major importance. In the Remagen operation, it was critical. Three divisions and great numbers of supporting units and supply vehicles were funneled over one road into the bridge area. The fact that the bridge sites were under almost constant artillery shelling materially added to the difficulty of the situation. On the night of 7-8 March, one of the first armored vehicles to start across the bridge became wedged between two struts and blocked traffic for 3 hours. By the time the bridge was cleared, the town of Remagen was jammed and traffic was impeded as far back as Birresdorf, nearly 7 miles to the rear. In order to eliminate this situation, the 9th Armored Division was designated to control traffic—a task later performed by the 14th Cavalry Group. A Corps traffic control headquarters was established in Remagen and a traffic control post was located at Gelsdorf, 9 miles west of Remagen. Here traffic was halted and proper distance between vehicles established. Five other control posts insured the maintenance of that distance.

Conclusions

The Remagen operation provides an excellent example of rapid and audacious exploitation of an unexpected fortune of war. Practically none of the essentials for a successful river crossing existed at the time the bridge was seized. The seizing of the bridge and the exploiting of the bridgehead presented a golden opportunity that justified taking great risks.

The operation also demonstrates an application of the doctrine of flexibility in plans and operations.

Lastly, and perhaps most important, the operation demonstrated confidence in the superior commanders. All commanders did something positive at once; none waited for confirmation or approval from the next higher commander before committing his unit to the operation.

* It is of interest to note that the treadway bridge completed on 10 March 1945 was the first tactical bridge to be built over the Rhine River since Napoleon performed the same feat. An interesting coincidence is that Caesar made his first Rhine crossing in 55 BC in the vicinity of Andernach. Two thousand years later, in 1945, the American crossing was made 12 miles north of the Roman crossing site.

Airborne Assault in Normandy

Gordon A. Harrison

This article is based on portions of Chapters V and VIII of Mr. Harrison's book, The Cross-Channel Attack, *one of the volumes soon to be published by the Historical Division of the Department of the Army in the series,* The U.S. Army in World War II. *Copyright 1949 by Orlando Ward; permission for reproduction may be obtained on request from the Chief, Historical Division, Special Staff United States Army, Department of the Army, The Pentagon, Washington 25, D.C.—The Editor.*

Airborne Planning

EXPERIENCE in the Sicilian invasion, although discouraging to some Allied observers, did not dampen the American command's enthusiasm for airborne operations. Both General Eisenhower and General Marshall concluded that a prime reason for the comparative failure of Sicily was the dispersion of the effort. Both wanted greater mass in future airborne operations. General Eisenhower recommended that all troops should be landed at once, rather than in successive waves, and that larger forces should be employed. General Marshall agreed, and added his opinion that "The value of airborne forces in *Overlord* would be immense, and would enable us to seize quickly and control ports which could not otherwise be used."

The thinking of airborne commanders was along much the same lines. The Airborne division, as organized under the Army Ground Forces concept of a miniature infantry division, did not suit its tactical employment in Europe. Major General Matthew B. Ridgway, commander of the 82d Airborne Division, from his experience in Sicily, proposed in December 1943 a new table of organization which would have added some 8,000 to 9,000 men, roughly doubling the current size of the division. The purpose was to make it capable of sustained ground effort. Although the new organization fitted the developing concept of using airborne forces in mass, it was rejected first by General Lesley J. McNair, Chief of the Army Ground Forces, and later, on reexamination, by the Joint Staff Planners. These actions postponed formal reorganization, but for European operations they made little practical difference. The two airborne divisions scheduled for use in *Overlord* were in fact swelled to something like the size recommended by General Ridgway, by attachment of four separate parachute regiments.

The February 1944 revision of the *Overlord* Plan struck out COSSAC's (Chief of Staff to the Supreme Allied Commander) use of airborne forces in dispersed packets for a variety of commando objectives. On 7 February, General Eisenhower proposed that two divisions be dropped simultaneously in the United States and British zones "with such depth of means including trained crews behind the simultaneous lift to enable a third airborne division to be dropped complete 24 hours later." To this, the British Air Staff replied flatly that it was impossible because of the lack of trained crews. Eisenhower, for the moment, accepted this verdict because he did not want to risk interference

with the "intensity of air effort" in the bomber offensive.

During February, however, it became apparent that there would be lift and crews enough for a simultaneous landing of one and two-thirds divisions. It was decided to land the 101st Airborne Division behind Utah Beach and two British airborne brigades (regiments) of the 6th Airborne Division east of the Orne River. First Army, in the meantime, had asked for a second airborne division to block the St. Lô-d'Ourville corridor and prevent enemy reinforcement of the Cotentin. This requirement was to be met by dropping the 82d Airborne Division in the vicinity of St. Sauveur le Vicomte on the night of D-day, using the aircraft returned from the initial operations.

The decision to land two United States airborne divisions in the Cotentin was under severe criticism as unduly risky. The "air people" anticipated heavy losses which they felt might result in negligible tactical achievement. Toward the end of April, Air Marshal Leigh-Mallory objected so strongly to the risks involved that a substantial revision of plans was made. There was now transport enough for the simultaneous dropping of the parachutists of both United States divisions. Leigh-Mallory agreed to this but insisted that most of the glider landings be made at dusk on D-day rather than earlier, as first planned. His reasons were that they would suffer heavy losses by daylight and that large-scale landings early on D-day would force dispersion of the parachutists for defense of the landing zones. His objections were sustained and the changes made.

But this was not the end. Late in May, when Allied Intelligence reported that the Germans had moved the *91st Division* into the Cotentin, the risks of the proposed airborne drops soared. It was proposed to move the 82d Division drop zones to the Merderet, and shift the 101st zones slightly southward so that both divisions would be committed in the relatively small and easily defensible area between the beaches and the Douve and Merderet Rivers. This proposal had to be modified, however, because the area seemed too small for landings by two divisions. The compromise was to drop the 82d Airborne Division astride the Merderet, two regiments landing west of the river with the mission of securing a bridgehead for exploitation to the west at least as far as the Douve.

Even so, the plan did not look promising. The Sicilian experience had convinced the British air staff that airborne troops should not be routed over heavily defended areas (enemy or friendly) and that they should not be landed where they would be immediately faced with opposition. The proposed Cotentin drops violated both of these precautions. Air Marshal Leigh-Mallory took an increasingly pessimistic view of what he called "this very speculative operation." On 29 May, he told General Eisenhower that it was unwise to risk his carrier force, that casualties were likely to run over 50 percent, and that the results would be so small that the airborne landings could not be depended on to insure the success of the Utah Beach assault. General Eisenhower replied that he agreed that the risks were great but that the airborne landings were essential to the whole operation and that,

Great risks were involved in the airborne phase of the invasion of northern France, but the vast air operation was considered vital to clear the way for the seaborne forces to move inland from the beaches

therefore, if the invasion was to go in, the airborne risks must be accepted.

* * * * *

Surprise Achieved

The time and place of the Normandy landing caught the Germans wholly by surprise. The German *Seventh Army* troops were not on the alert. Their first knowledge that anything was afoot was a series of reports in the early morning hours of 6 June that Allied paratroopers were dropping from Normandy skies. At 0130, Lieutenant Colonel Hoffmann, commander of the *3d Battalion, 919th Regiment, 709th Division,* was at his headquarters in St. Floxel east of Montebourg. He heard aircraft approaching. The sound indicated great numbers, and, as he listened during the next hour, it seemed to him to swell louder and louder.

At 0200, six airplanes flying, he thought, at about 500 feet approached the headquarters shelter and released parachutists in front and above it. In a few minutes, Hoffmann's staff and security guards were heavily engaged with paratroopers of the 101st Airborne Division in one of the opening skirmishes of the battle for Normandy.

News of the landings spread fast. At 0215, *Seventh Army* ordered the highest state of alarm through the *LXXXIV Corps* sector. The alarm was passed at once by wire to all army, navy, and air force units in the Corps area. At 0220, landings were reported near the Marcouf coastal battery. During the next 5 minutes, additional reports came in of landings in the sector of the *716th* and *711th Divisions.* Before 0300, *LXXXIV Corps* had taken its first prisoner.

General Pemsel, *Seventh Army* Chief of Staff, had already (by 0300) concluded that the long-heralded major invasion had begun. He had correctly located the points of main efforts near Carentan and Caen. His judgment, however, was at this time a minority report. Field Marshals Rundstedt and Sperrle and Admiral Krancke, as well as Rommel's Chief of Staff, General Speidel, all thought they were probably experiencing the diversionary operation which had been expected in the *Seventh Army* area while the Allies got ready to strike the main blow against *Fifteenth Army.* But whatever the larger estimate of the situation, local measures could be and were promptly taken. The *91st Division,* in reserve in the Cotentin, was released to *Seventh Army,* attached to *LXXXIV Corps* and, together with the *709th Division,* was ordered to counterattack.

By the revised VII Corps field order of 28 May, both United States airborne divisions were to land in the eastern half of the peninsula between Ste. Mere Eglise and Carentan, establishing a beachhead from which the Corps would push west and north to the capture of Cherbourg. The six parachute regiments of the two divisions, which together with organic supporting units numbered over 13,000 men, were loaded in just under a thousand transport planes at nine airdromes in England.

They began taking off before midnight to follow carefully plotted courses that would bring the planes in from the west side of Cotentin peninsula and over the designated drop zones at 0130. The main flights were preceded by pathfinder planes who were to land paratroopers to mark the drop zones. Glider reinforcements would be brought in at dawn and again at dusk on landing zones which the paratroopers were expected to have cleared of the enemy. The whole airborne operation was by far the largest and most hazardous ever undertaken, and thousands of American lives depended on its success.

101st Airborne Division

The primary mission of the 101st Airborne Division was to seize the western edge of the flooded area back of the beach

AIRBORNE ASSAULT AREA IN NORMANDY
THE D-DAY BEACHES
6 JUNE 1944
FIRST US
XXXX SECOND BRITISH
UTAH BEACH
OMAHA BEACH
GRANDCAMP
BAYEUX
CARENTAN
ISIGNY
TREVIERES
MONTEBOURG
St. Floxel
St. Marcouf
Ste.-Mère Eglise
Grandcamp
Aure R.
Port-en-Bessin
Aure R.
Drôme R.
Vire R.
Taute R.
Douve R.
Merderet R.
Foucarville
St. Germain de Varreville
St. Martin de Varreville
Audouville-la-Hubert
Houdienville
Pouppeville
Ste. Marie du Mont
Vierville
Angoville-au-Plain
les Droueries
Basse Addeville
le Port
Brevands
la Barquette lock
Beuzeville au-Plain
Turqueville
Hiesville
Culoville
Beaumont
Come R. du Mont
Neuville au-Plain
Beauvais
Ste. Mère Eglise
Chef du Pont
Blosville
Amfreville
La Fière
Picauville
Etienville (Pont l'Abbé)
Beuzeville la Bastille
Meautis
0 1 2 3 4 5 MILES

between St. Martin de Varreville and Pouppeville. The secondary mission was to protect the southern flank of VII Corps and be prepared to exploit southward through Carentan. The latter task was to be carried out by destroying two bridges on the main Carentan highway and the railroad bridge west of it, by seizing and holding the la Barquette dam, and finally, by establishing a bridgehead over the Douve River northeast of Carentan.

Two parachute regiments, less one battalion (the 502d and the 506th (—)), were assigned the primary mission. The 502d Parachute Infantry with the 377th Parachute Field Artillery Battalion attached, was to drop near St. Martin de Varreville, destroy the enemy coastal battery there, secure the two northern beach exits, and establish a defensive line tying in the division's north flank with the 82d Airborne Division to the west. The 506th Infantry would seize the two southern exits.

The four battalion serials of the 502d Infantry came in 10 minutes apart, led by the 2d Battalion and Regimental Headquarters. The leading planes, scattered by clouds and *flak*, dropped the majority of the 2d Battalion outside their assigned zone. The battalion, as a result, spent most of the day assembling and took no part in the D-day fighting as a unit. The regiment's planned artillery support did not materialize. Only one of the six howitzers of the 377th Field Artillery Battalion was recovered after the drop, and the 50 men of the battalion who assembled during the day fought as infantry in scattered actions.

The commander of the 3d Battalion, Lieutenant Colonel Robert G. Cole, dropped east of Ste. Mere Eglise. He began, then, to make his way toward St. Martin de Varreville, collecting, as he went, a miscellaneous group of about 75 men. The latter included some paratroopers from the 82d Airborne Division. Except for an encounter with a small enemy convoy on the way, in which some Germans were killed and 10 taken prisoner, the group had no trouble reaching its objective. Discovering that the St. Martin coastal battery had been destroyed by bombing and that the position was deserted, Cole went on to Audouville-la-Hubert where his men established themselves at the western end of the causeway without a fight.

About 2 hours later, at 0930, the enemy began retreating across the causeway from the beach. The paratroopers, lying in wait for them, shot down some 50 or 75 and at 1300 made contact with the 8th Infantry (4th Division). They had suffered no casualties. Cole, having completed his mission, remained in the area to collect and organize his battalion. By the end of the day, he had about 250 men. With this group, he was ordered into regimental reserve near Blosville for the next day's operations.

The 1st Battalion, 502d Parachute Infantry (Lieutenant Colonel Patrick J. Cassidy), had a much harder fight for its objectives. Colonel Cassidy landed about in the center of the battalion zone near St. Germain de Varreville. He collected a small force, mostly of his own men, and moved toward the buildings (called WXYZ in the plan) which were thought to be occupied by the German unit manning the St. Martin coastal battery. Without opposition, the battalion secured the crossroads west of St. Martin near which the buildings stood. Taking stock of his position there, Colonel Cassidy found that both the northern exits for which the regiment was responsible were clear. He then made contact with a group of 45 men of the battalion who had assembled north of his own position and ordered them to establish a defensive line at Foucarville. The situation to the west of St. Martin, however, remained obscure. Colonel Cassidy decided to keep a portion of his force (nominally a company) in reserve to

block any enemy attempt to break through from the west to the beaches. The rest attacked to clean out the WXYZ buildings. As the buildings were stone and were occupied by about 150 Germans who resisted stubbornly, dislodging them developed into a stiff fight which lasted from daylight until well into the afternoon.

Near the close of this action, Lieutenant Colonel John H. Michaelis, regimental commander, arrived in the area with 200 men. Cassidy was thus free to complete his D-day mission, which was to cover the north flank of the regiment and tie in with the 82d Airborne Division on the left. While the WXYZ fight was in progress, the men of the 1st Battalion, whom Colonel Cassidy had sent to Foucarville in the morning, had succeeded in establishing four road blocks in and around the town and had trapped and largely destroyed a four-vehicle enemy troop convoy. Despite this early success, the road blocks were threatened all day with being overrun by a superior enemy force that occupied prepared positions on a hill to the northwest.

The American situation was not immediately improved by Cassidy's move north, since he came up west of Foucarville in order to carry out the plan of tying in at Beuzeville-au-Plain with the 82d Airborne Division. He ran into trouble there. The company ordered to Beuzeville-au-Plain mistook the hamlet of le Fournel for their objective and there became involved in three separate platoon fights which proceeded in some confusion until dark. They then withdrew to the south where they remained under enemy pressure during the night. Since contact was not made with the 82d Airborne Division, Cassidy committed the reserve company on the left and moved up some spare riflemen to fill the gap between le Fournel and the roadblocks around Foucarville. Even so, the whole line remained very weak. The regimental commander, having already decided to pass the 2d Battalion through the 1st Battalion on the following day, ordered Colonel Cassidy to pull back and dig in.

During the night, the Germans facing the battalion's right flank at Foucarville unexpectedly decided to surrender, apparently because the increasing volume of American machine-gun and mortar fire led them to overestimate the battalion's strength. Eighty-seven Germans were taken prisoner and about 50 more shot down as they attempted to escape.

Here, as elsewhere in the 101st Airborne Division's early contacts with the enemy, it seems that the German dispersion of units in small packets to garrison villages and strongpoints took no account of the splintering effect of airborne landings in their midst, even though the enemy command expected just such landings. The isolated German units, apparently out of contact with their parent outfits, ignorant of what was occurring as well as of what German countermeasures were in the making, were prone to fancy themselves about to be overwhelmed whenever American fire was brought to bear on them with any persistence. The attacker, at least, had the morale advantage of knowing the large things that had been planned, even though he seldom knew what was actually transpiring beyond the field or village in which he found himself.

The two beach exits south of the zone of the 502d Infantry were the responsibility of the 506th Parachute Regiment (Colonel Robert F. Sink). The 506th (less the 3d Battalion) was to land between Hiesville and Ste. Marie du Mont, to seize the western edge of the inundated area between Audouville-la-Hubert and Pouppeville. The 3d Battalion, dropping just south of Vierville and charged with defending the Douve River line in the regiment's sector, was to seize two bridges at le Port and establish a bridgehead there for subsequent exploitation southward.

Like the 502d, the 506th experienced a

badly scattered drop, but had rather better luck in assembling rapidly. Within 2 hours of landing, about 90 men of regimental headquarters and 50 men of the 1st Battalion (Lieutenant Colonel William L. Turner) had assembled in the regimental zone. Colonel Sink established his command post at Culoville. At the same time, the 2d Battalion (Lieutenant Colonel Robert L. Strayer), despite a landing completely out of its zone in the sector of the 502d Parachute Infantry to the north, nevertheless succeeded in assembling rapidly about 200 of its men. Strayer had the principal regimental mission of securing the southern beach exits at Houdienville and Pouppeville. Before dawn, his men headed south toward their objectives. They ran into opposition, however, on the same road over which the 1st Battalion, 502d Parachute Infantry, had passed shortly before on their way to the WXYZ buildings. Delayed all morning by enemy machine guns, they did not reach their first objective, Houdienville, until early afternoon, after the seaborne troops were already through the exit and proceeding inland.

The 506th regimental commander at Culoville, in the meantime, knew nothing of the 2d Battalion's movements. He therefore decided to send his reserve, the 1st Battalion under Colonel Turner, to carry out a part of the mission. Turner's "Battalion" of 50 men was ordered to Pouppeville. Again relatively light enemy opposition succeeded in harassing the march and delaying Turner's arrival on his objective for several hours.

In the course of the delay, a third unit was sent on the same mission by the Division commander, Major General Maxwell Taylor, who had no knowledge of the two previous moves. The 3d Battalion, 501st Parachute Infantry (Lieutenant Colonel Julian Ewell), had been designated to land as division reserve with the additional task of protecting the glider landing zone northwest of Hiesville. Although three planes of the 3d Battalion serial were shot down with the loss of three-quarters of their personnel, and other planes were scattered by fog and *flak*, enough carried out their scheduled drops so that about 300 men of the battalion and of the division headquarters were able to assemble quickly and establish the division command post as planned near Hiesville. It was from there that Colonel Ewell, with a group of about 40 men from the line companies and some miscellaneous headquarters personnel, was sent at 0600 to clear the Pouppeville beach exit.

At about 0800, Ewell's men reached Pouppeville and attacked to clean it out. The enemy force of 60 to 70 men of the *1058th Regiment (91st Division)* did not offer determined resistance but it was nevertheless a slow task for the numerically inferior Americans to fight them house-to-house. It was noon before the local German commander surrendered. The Americans had suffered 18 casualties, while inflicting 25 on the enemy and taking 38 prisoners. The rest of the enemy in Pouppeville retreated toward the beach where they were caught by the advancing United States seaborne forces, and surrendered to the 8th Infantry. The first contact between seaborne and airborne forces was made at Pouppeville between Colonel Ewell's men and the 2d Battalion, 5th Infantry (Lieutenant Colonel Carlton O. MacNeely).

Throughout D-day, Colonel Sink at the 506th regimental headquarters felt wholly isolated and almost alone on the Cotentin Peninsula. Most of the time he was out of touch with his own battalions, and with the division. He had little information about the enemy, and his headquarters was involved in scattered fights for its own security. The regiment, unknowingly, had set up in the midst of a small hornet's nest. In the Ste. Marie du Mont area was the entire *2d Battalion* of the *191st Ar-*

tillery Regiment which had been committed in coastal defense in the *709th Division* sector. The American group maintained itself, fighting off enemy riflemen who twice during the day closed in among the surrounding hedgerows. In the evening, with forces of the 1st and 2d Battalions, Colonel Sink controlled about 650 men.

The 101st Airborne Division, within a relatively few hours of landing, had secured the western edge of the inundated area west of Utah Beach. This was accomplished, not quite according to plan, but on time and with much smaller cost than anyone had thought possible before the operation. The remaining part of the division's D-day task was to seize and occupy the line of the Douve River on either side of Carentan initially to protect the southern flank of VII Corps and later to drive southward through Carentan to weld together the VII and V Corps beachheads.

The 3d Battalion, 506th Parachute Infantry, was to drop south of Vierville, seize two bridges over the Douve at le Port, and establish a bridgehead on the south bank of the river. Its mission came perilously near failure at the outset. The enemy, fully alerted before the drop, not only put up a heavy antiaircraft barrage but illuminated the drop zone by setting fire to an oil-soaked building nearby. Paratroopers who landed in the area were greeted by a concentration of machine-gun bullets and mortar shells. Others, experiencing delayed drops, came down in or near the swamplands east of the drop zone.

The battalion S-3, Captain Charles G. Shettle, landing near Angoville, collected 2 officers and 12 men and then proceeded at once across the flat marshy river plain toward his objective. By the time he reached the bridge at Brevands at 0430, he had picked up a total of 33 men. There he was reinforced by 20 more a little later and another 40 during the night. Shettle's group established themselves first on the southeast bank of the river but could not hold the position in the face of increasing enemy machine-gun fire. They therefore withdrew across the river and dug in on the northwest bank. During the day, the enemy did not counterattack. In the middle of the night, he made only a half-hearted push toward the bridge from which he readily backed off when the Americans opened fire.

The situation at Brevands on D-day paralleled that on the northern flank where the 502d Parachute Infantry was also holding a tenuous line facing superior enemy forces. Both defenses succeeded mostly by grace of the enemy's reluctance to leave his prepared positions and attack, and his confusion as to American strength and intentions. It is worth observing, however, that the Carentan canal was the boundary between German *709th* and *352d Divisions*. The latter, located to the south, would not attack across the canal without orders from Corps. Corps in fact, had ordered the reserve unit, the *6th Parachute Regiment*, to make such an attack from the south but it did not at once come into action.

Completion of the 101st Division's defense of the Douve River line as far as St. Come du Mont was the task of the 501st Parachute Infantry (Colonel Howard R. Johnson), less the 3d Battalion. The regiment's missions, in detail, were to seize the lock at la Barquette, blow the bridges on the St. Come du Mont—Carentan road, take St. Come du Mont if possible, and destroy the railroad bridge to the west. Of these objectives, the la Barquette lock had a special importance for the planners.

The purpose of the lock was to permit the controlled flow of the tide up the river. If the lock were destroyed, the swamplands of the Douve and Merderet would suffer erratic tidal flooding. On the other hand, partial obstruction of the lock would permit controlled flooding of the same area by backing up the river flow. It was believed

that capture of the lock was tactically important in order that VII Corps might control the Douve and Merderet inundations, which together constituted a barrier to military movement across the whole eastern half of the base of the peninsula.

Just before D-day, the drop zone for the 501st Parachute Infantry (and the 3d Battalion, 506th) had been shifted about a mile and a half southeast—from the vicinity of Beaumont to east and south of Angoville-au-Plain—in order to bring the paratroopers down nearer their objective and avoid the anti-airlanding obstacles which last minute reconnaissance had discovered on the original drop zone. The change does not seem to have affected the accuracy of the drop. In the drop, however, the entire 1st Battalion command was lost. The commanding officer was killed; the staff and all the company commanders were missing from the first critical battles.

Colonel Johnson, the regimental commander, landed about where he was supposed to. In the process of moving southward toward la Barquette, he managed to collect some 150 men of miscellaneous units with whom he set out to accomplish his mission. The first step went well. A portion of the force crossed the lock before the enemy had been fully alerted and dug in on the far side. They seemed relatively secure there as the enemy made no attempt to press them. Colonel Johnson therefore decided to try to get the Douve bridges to the west. With 50 men, he first went north to Basse Addeville where he had ascertained that a considerable number of paratroopers had assembled under Major Richard J. Allen, the regimental S-3. Although Allen's men were already in contact with the enemy to the north and west, it proved possible to assemble about 50 of them in the early afternoon to return with Colonel Johnson to la Barquette. Met by intense enemy artillery mortar and small-arms fire, chiefly from the rear, the force called for naval fire support through a naval shore fire control officer who had initially joined Major Allen's unit at Addeville. Salvos from the 8-inch guns of the *Quincy* adjusted on enemy positions around St. Come du Mont caused almost immediate slackening of the enemy fire. At about 1500, Major Allen was ordered to bring the rest of his force to the lock and he joined Colonel Johnson an hour or two later.

Even with this support, however, it still proved impossible to advance westward to the Douve bridges. The *3d Battalion* of the German *1058th Regiment* held St. Come du Mont and the surrounding ground in force and strongly resisted with fire every move in that direction. The opposition here in the sector of the *91st Division*, and immediately to the south where the *6th Parachute Regiment* held Carentan and the road and rail bridges, was much more determined than anywhere in the coastal sector held by the *709th Division*.

The unexpected strength of the enemy in the Carentan—St. Come du Mont area had been discovered by the 2d Battalion, 501st Parachute Infantry (Lieutenant Colonel Robert A. Ballard) shortly before Colonel Johnson tried unsuccessfully to move westward. Colonel Ballard had assembled parts of his lettered companies and his battalion staff between Angoville-au-Plain and les Droueries. Since his assigned mission was the destruction of the Douve bridges above Carentan, he began at once an attack toward St. Come du Mont. The companies of about 30 men each ran into strong opposition in the hamlet of les Droueries, which they had attacked frontally in the belief that not more than an enemy platoon faced them. They were turned back. A renewed flanking attack was meeting some success when Colonel Ballard was ordered by Colonel Johnson to move to la Barquette to participate in the attack from that point toward the Carentan highway. The 2d Battalion dis-

engaged, but, in attempting to move south through Addeville, was stopped almost immediately by heavy fire from the same enemy force that had opposed the attack on les Droueries. Ballard's men remained during the night in close contact with the enemy.

In the meantime, Colonel Johnson abandoning for the time the attempt to get to the Douve bridges, consolidated the position at la Barquette, deepening the southern bridgehead, pushing out the flanks, and maintaining contact with the 3d Battalion, 506th Parachute Infantry, on the east. Patrols during the night were sent out to try to find the 506th Regiment and Division Headquarters, but they did not succeed. The southern line remained isolated and precariously held by groups equivalent to about three companies instead of the three battalions as planned.

By the end of D-day, the 101st Airborne Division had assembled only about 2,500 of the 6,600 men who had dropped during the early morning hours. They were distributed in mixed units of varying size. But despite the handicaps of scattered landings and heavy losses in both men and equipment, the division had carried out the most important of its D-day tasks. Above all, the paratroopers had succeeded in clearing the way for the move of the seaborne forces inland. This was the task which had been considered so vital to the whole Allied invasion plan that it warranted the extraordinary risk of airborne landings in heavily defended enemy territory. If the division's defensive line north and south were weak, that weakness was for the moment balanced by the enemy's failure to organize concerted counterattacks.

82d Airborne Division

The position of the 82d Airborne Division (Major General Matthew B. Ridgway) on the west was cause for far greater concern both to General Ridgway and to the Allied command. Landing on the edge of the assembly area of the German *91st Division*, it met more determined opposition in the early stages. It suffered more seriously also from scattered drops, which left two of its regiments unable to assemble in sufficient force to carry out their missions.

By the revised plan of 28 May, Ridgway's division was ordered to drop astride the Merderet River, clear the western portion of the bridgehead area between the sea and the Merderet, and from the Douve River north to Ste. Mere Eglise, and establish a bridgehead on the west bank of the Merderet. One parachute regiment (the 505th) was to capture Ste. Mere Eglise, secure crossings of the Merderet near La Fiere and Chef du Pont, and establish a defensive line north from Neuville-au-Plain to Beuzeville-au-Plain to tie in with the 502d Parachute Infantry of the 101st Airborne Division. The other two regiments (507th and 508th), dropping west of the river, were to consolidate the two 505th bridgeheads and push out a defensive line westward about 3 miles, anchored on the south at the crossroads just west of Pont l'Abbe and thence extending north in an arc through Beauvais. The 507th Parachute Infantry would defend the line of the Douve, destroying bridges at Pont l'Abbe and Beuzeville la Bastille. Both regiments would be prepared to attack west in the direction of St. Sauveur le Vicomte.

Only one of the 82d Airborne Division's missions was carried out according to plan: the capture of Ste. Mere Eglise. Success at Ste. Mere Eglise was due in part to the unusually good drop of the 505th Parachute Infantry northwest of the city. Most of the regiment's planes, though initially scattered like the others, were able to circle back and release the paratroopers over the drop zone which pathfinders had clearly marked. In addition, the regiment had the good fortune to

come down in an area devoid of enemy. The 3d Battalion (Lieutenant Colonel Edward C. Krause), which was to take the town of Ste. Mere Eglise, rapidly assembled about a quarter of its men and moved out in the early morning hours. Counting on speed and surprise, Colonel Krause ordered his men to enter the town without a house-to-house search and to use only knives, bayonets, and grenades while it was still dark so that enemy gunfire could be spotted. The enemy was caught off balance and before dawn the town had fallen—the first prize for American arms on the continent of Europe. Resistance had been slight. When Ste. Mere Eglise was cleared, Krause's men counted only 10 enemy dead and about 30 prisoners. The battalion cut the main Cherbourg communications cable and established a perimeter defense of the town.

The 2d Battalion, 505th Parachute Infantry (Lieutenant Colonel Benjamin H. Vandervoort), in the meantime had assembled half of its men and was moving northward to establish the regimental defense line through Neuville-au-Plain and Bandienville. At 0930, the enemy counterattacked Ste. Mere Eglise from the south and the regimental commander, Colonel William E. Ekman, ordered his 2d Battalion back to aid in the defense. Before turning back, Colonel Vandervoort detached a platoon under Lieutenant Turner B. Turnbull and sent it to organize a defense at Neuville, which was reported to be lightly held by the enemy. Turnbull moved through the town without opposition and deployed his men on the high ground north of the town. But he was hardly in position before the enemy attacked with a force outnumbering the defenders about five to one. The platoon fought stubbornly and for 8 hours held its ground. The small action had a significance which Turnbull did not realize at the time. The fight at Neuville kept the enemy in the north at arm's length while the defenders of Ste. Mere Eglise beat off the simultaneous enemy attack from the south. The cost of the platoon's gallant stand was heavy. Only 16 of the 42 men who had gone to Neuville-au-Plain survived to be withdrawn late in the afternoon to rejoin their battalion.

The 2d Battalion arrived at Ste. Mere Eglise about 1000 and took over the northern half of the perimeter defense, permitting the 3d Battalion to strengthen its position on the south. Two companies were held in reserve inside the town. By agreement between the battalion commanders, Colonel Krause took charge of the defense. The first enemy thrust up the Carentan road, made by about two companies supported by some armor, was repulsed. Krause then ordered a counterattack. Company I with 80 men was instructed to move out south, turn east, and hit the flank of the enemy whose main positions were astride the highway. But the company, confused by the hedgerows, turned too soon, emerging not on the flank but directly in front of the enemy's position. The mistake proved lucky. The premature wheel brought the Americans to the highway on top of a German convoy, which they were able to destroy with grenades. Recoiling from the shock of this unexpected blow, the enemy apparently again over-estimated American strength and withdrew. Company I followed the withdrawal a little way, then returned to the town. The enemy made no further serious effort during the day to dislodge the Americans.

The prompt occupation of Ste. Mere Eglise and its defense was a boon for which the 82d Airborne Division had increasing reason to be grateful as the day's actions along the Merderet River developed. The establishment of bridgeheads over the Merderet was the mission of the 1st Battalion of the 505th Parachute infantry, attacking from the regiment's drop zone east of the river. Ultimate success in

this mission, however, depended on the ability of the 507th and 508th Parachute Infantry Regiments to occupy the west bank of the river in force. The 507th and 508th drop zones lay in the triangle at the confluence of the Douve and Merderet Rivers—an area of about 12 square miles —and along the outer perimeter of the VII Corps planned beachhead. The presence of the enemy in the scheduled drop zones prevented the pathfinders from marking them, and the pilots of the two regimental serials, looking in vain for the markers, in most cases delayed flashing the jump lights until they had overshot the zones. Both regiments were thus widely dispersed. Many paratroopers, heavily laden with equipment, dropped in the swamplands along the river.

Absorbed naturally with the basic problem of assembling, these paratroopers tended to collect along the embankment of the main railroad from Cherbourg to Carentan. It was high, dry ground and a recognizable terrain feature. By following this embankment south, they arrived in the vicinity of La Fiere with the river between them and their objectives. The only large group (under command of Brigadier General James A. Gavin, assistant division commander) which tried to push down along the edge of the swamps on the west bank of the river was delayed in starting until dawn by vain efforts to recover equipment from the swamps. With daylight, enemy fire west of the river became intense. Gavin therefore had to give up the attempt. He moved his men on down the embankment to join the others west of Ste. Mere Eglise.

By the middle of the morning, 500 to 600 men of miscellaneous units had gathered at La Fiere, which was one of the two known crossings of the Merderet in the 82d Airborne Division zone. The La Fiere crossing was an exposed narrow causeway raised a few feet above the river flats. It extended 400 to 500 yards from the bridge over the main river channel to the gently rising hedgerow country of the west shore.

Two of the first groups on the scene, portions of Company A of the 505th and a group mostly of the 507th Infantry under Lieutenant John H. Wisner, had tried to rush the bridge in the early morning but were repulsed by machine-gun fire. When General Gavin arrived, he decided to split the La Fiere force and sent 75 men south to reconnoiter another crossing. Later, receiving word that the bridge at Chef du Pont was undefended, he took another 75 men himself to try to get across there. The groups remaining at La Fiere were organized for a new attack by Colonel Roy Lindquist, commanding officer of the 508th Parachute Infantry.

In the meantime, west of the river, about 50 men of the 2d Battalion, 507th Parachute Infantry, had collected under the battalion commander, Lieutenant Colonel Charles J. Timmes, near Amfreville. Colonel Timmes sent out a patrol which succeeded in occupying Canquigny, the tiny village at the west end of the La Fiere causeway. However, in view of their own small numbers and the strength of the enemy infantry to the south and east, they could not clear the west bank.

At noon, the forces around La Fiere gathered for a coordinated three-company attack. In 2 hours, one company under Captain F. V. Schwarzwalder succeeded in carrying the attack across the causeway and establishing contact with Timmes' "battalion." The way was then open to consolidating the bridgehead and completing one of the most important of the 82d Airborne Division's missions. The initial success, however, was not followed up. The first crossing by about 75 men was not immediately reinforced. Furthermore, Schwarzwalder's company, instead of holding on the west bank, decided to proceed on

to Amfreville to join the 2d Battalion, 507th Parachute Infantry, to which most of the men belonged. As Schwarzwalder moved out, the enemy began to react to the initial American attack with artillery, small-arms fire, and, at last, a tank sally. It was in the middle of this counterattack that belated American reinforcements arrived on the west bank and were immediately disorganized and beaten back. The bridge was lost. The battalion at Amfreville was isolated under heavy and continuing enemy pressure which effectively prevented it for the next 2 days from any further active attempts at accomplishing the division's mission. The enemy tried to follow up his advantage with attacks across the causeway. These netted him only temporary footholds on the east bank but during the day compelled the Americans to bring back most of the troops sent earlier to probe out river crossings to the south.

While the La Fiere bridge was won and lost, the attempt to cross at Chef du Pont had reached a temporary deadlock. A relatively small number of Germans who were dug-in along the causeway tenaciously resisted all efforts to dislodge them. Late in the afternoon, after most of the paratroopers had been recalled to strengthen the La Fiere position, the understrength platoon left at Chef du Pont under Captain Roy E. Creek was threatened with annihilation by an enemy counterattack. Under heavy direct fire from a field piece on the opposite bank, and threatened by German infantry forming for attack on the south, Creek's position seemed desperate. At that moment, a glider bearing an antitank gun landed fortuitously in the area. With this gun, the enemy was held off while about a hundred paratroopers, in response to Creek's plea for reinforcements, came down from La Fiere. The reinforcements gave Creek strength enough to beat off the Germans, clear the east bank, and finally cross the river and dig in. Thus, one Merderet bridgehead was secured before the end of D-day, but it was hardly of the size planned or required for the subsequent exploitation by VII Corps westward.

The capture of Ste. Mere Eglise and the struggle for the Merderet crossings at La Fiere and Chef du Pont constituted the main D-day effort of the 82d Airborne Division. West of the river, at least four groups had succeeded in organizing themselves. Although cut off from the division and fighting more often for survival than in an attempt to carry out planned missions, these groups contributed something to the Allied effort, especially in hindering German counter moves from the west. Particularly successful and important in this respect was the group of the 508th Parachute Infantry, amounting to about two companies of men under command of Lieutenant Colonel Thomas J. B. Shanley (Commanding officer of the 2d Battalion). Landing near Picauville, Colonel Shanley gathered a small force of paratroopers, but it was too small to proceed with his mission of destroying the Douve bridge at Pont l'Abbe. He tried during the day to join with other groups in the vicinity with whom he had radio contact. But being under constant enemy pressure, he was unable to effect a junction until late in the day. It had then become apparent to him that he was engaged with an enemy force of at least battalion strength, and he decided to withdraw to the battalion assembly area on hill 30. In fact, the Germans, elements of the *1057th Regiment*, had been pushing eastward in this area most of the day under orders to counterattack to wipe out American parachutists west of the Merderet. Colonel Shanley's resistance undoubtedly helped save the forces at La Fiere and Chef du Pont. Once he was firmly established on hill 30, he formed a valuable outpost against continuing German attacks and a few days later would be in position to contribute substantially to establishing the Merderet bridgehead.

The German Reaction

As reports of the airborne landings came in to the German *Seventh Army* headquarters and the extent of the landings became apparent, General Dollman ordered a series of moves designed to seal off the airhead and destroy it. The *709th Division*, with the *1058th Regiment (91st Division)* attached, was ordered to clear the area east of the Merderet while the *91st Division* counterattacked from the west with the *1057th Regiment* and the *100th Panzer Replacement Battalion* with the mission of wiping out paratroopers who had landed west of the inundated area. The *6th Parachute Regiment* under control of the *91st Division* was to attack through Carentan from the south. Finally, at the end of the day, the *Seventh Army Sturm Battalion* was ordered to move against the American bridgehead from the vicinity of Cherbourg, attacking in the direction of Ste. Mere Eglise. A regiment of the *243d Division* was ordered to move by night to Montebourg. By means of these moves and concentric counterattacks, Dollman was sure at first that he could cope with the Cotentin landings without moving in any additional forces. It was only in the evening that his optimism waned. The *91st Division* reported that its counterattack was making very slow progress because of the difficulties of maneuvering in the hedgerow country. In fact, the attack had scarcely materialized at all except in local actions along the Merderet.

Similarly, the *1058th Regiment*, apparently harassed by scattered American paratroopers, could not get moving in its attack toward Ste. Mere Eglise. By evening, its advance elements were still north of Neuville-au-Plain. General von Schlieben, commander of the *709th Division*, ordered it to resume the attack on Ste. Mere Eglise the next morning. He attached to it two motorized heavy artillery battalions, the *456th* and *457th* (each with two 150-mm guns and a battery of Russian 122-mm guns) and the self-propelled company of the *709th Antitank Battalion*.

For the general sluggishness of German reaction in the Cotentin, there seem to have been several explanations. In the first place, two of the three division commanders, von Schlieben and General Falley (of the *91st Division*) were at Rennes, together with some of the subordinate commanders, attending a war game, when the invasion struck. Schlieben did not get back to his headquarters near Valognes until noon. Falley, on his return, was killed by paratroopers. To the uncertainty caused by the commander's absence was added the confusion of disrupted communications. Von Schlieben, for instance, during the day, had no contact with two of his battalions in the thick of the fighting: the *1st Battalion, 919th Regiment*, in the Utah Beach area, and the *795th Georgian Battalion* near Turqueville. In attempting counterattacks against scattered United States riflemen, the Germans experienced the same difficulties with the hedgerow country as the Americans did. Finally, the *LXXXIV Corps* headquarters, far away in St. Lô, could not exercise effective control and coordinate the action of the three divisions in the peninsula. On the other hand, communications were not set up to enable the division commanders to effect their own coordination.

The experience of the German *6th Parachute Regiment* illustrates in striking fashion the confusion and lack of coordination in the initial German reactions and throws a strange half-light on the D-day battles in the Cotentin. The commander of the regiment, Major von der Heydte, was attending the Rennes war games when the Allied landings began. At about 0600, however, he contacted General Marcks at *LXXXIV Corps* headquarters by telephone and got his orders, which were to attack with his regiment through Carentan and

clean out the rear area of the *709th Division* between Carentan and Ste. Mere Eglise.

Von der Heydte reached Carentan in the morning and found no Allied troops and very few Germans. He got in touch with his battalions and ordered them to assemble in the Meautis area. He then climbed the church steeple in St. Come and looked around. The picture before him was, he said, overwhelming. He could see the Channel and the armada of Allied ships, covering the water to the horizon. He could see hundreds of the small landing craft plying to the shore, unloading men, tanks, and equipment. Yet, for all that, he got no impression of a great battle in progress. It was then about noon. The sun was shining. Except for a few rifle shots now and then, it was singularly quiet. He could see no Allied troops.

It was apparently von der Heydte's impression that no seaborne United States troops had come inland in the direction of St. Come. In accordance with that impression, he made his dispositions. He ordered his battalions to come up to St. Come. The *2d Battalion* was then instructed to proceed to Ste. Mere Eglise and attack and destroy any enemy encountered. The *1st Battalion* was to move to the high ground near Ste. Marie du Mont and protect the regiment from any enemy thrusts inland from the sea. The *3d Battalion* was to return to Carentan to provide the regiment with a defense in depth. The attached *3d Battalion 1058th Regiment* was to remain with von der Heydte in St. Come du Mont.

The *1st* and *2d Battalions* moved out at about 1900. By midnight, the *1st Battalion* had marched, apparently without serious trouble, through the territory occupied by the 101st Airborne Division and reached the vicinity of Ste. Marie du Mont. The *2d Battalion* came within 5 or 6 hundred yards of Ste. Mere Eglise. Both battalions sent a number of American prisoners back to regimental headquarters.

During the night, the landing of United States glider reinforcements impressed von der Heydte as new large-scale airborne landings. They cut off the *2d Battalion* from the regiment and from the *1st Battalion.* In fact, of course, both battalions were already cut off by the advance of the US 8th Infantry inland, but this was apparently unknown to von der Heydte. He ordered the battalions to maintain contact with each other and pull back to form a crescent defense of St. Come. Only the *2d Battalion* acknowledged receipt of the order and reported that it was not in touch with the *1st Battalion.* It was also not free to move south, as it discovered during the next 2 days. As for the *1st Battalion,* it set out on the morning of 7 June to rejoin the regiment, moving south toward Carentan. It never got there. At the Douve River, it ran into the 101st Airborne Division units and surrendered almost to a man.

Von der Heydte's experience was typical of the inability of the German forces to concentrate against the landings, even when, as in case of the 82d Airborne Division, they were scattered and relatively weak. Thanks to this failure, the 82d was able to maintain itself while it gradually built back its strength. At the end of D-day, the Division was strongly ensconced in the vicinity of Ste. Mere Eglise, but was precariously situated outside the main VII Corps beachhead. It had no contact with the 101st Airborne or 4th Infantry Divisions. It had assembled only a fraction of its own men. Planned seaborne reinforcements had not arrived. The bulk of the glider reinforcements (the 325th Glider Infantry) were not due until the next morning. At the end of the day, the division lacked at least 60 percent of its combat infantry and 90 percent of its artillery. Total casualties were probably near 4,000, the bulk being the missing paratroopers who had been scattered far and wide in enemy territory.

The Role of Electronics in Warfare

Lieutenant Colonel Henry H. Rogers, *Infantry*
Instructor, Command and General Staff College

"IT IS not easy to determine whether industrial progress, improved organization, the spread of education, or mechanical inventions, have wrought the greatest change in the military art.

"War is first and foremost a matter of movement; and as such it has been considerably affected by the multiplication of good roads and the introduction of steam transport. In the second place, war is a matter of supply, and the large area of cultivation and the possibility of food stuffs being poured from one continent to another have done much to lighten the difficulties of a campaign. In the third place, war is a matter of destruction; and while weapons of armies have become more perfect and more durable, the modern substitutes for gunpowder have added largely to their destructive capacity. Fourthly, war is not merely a blind struggle between mobs of individuals, without guidance or coherence, but a conflict of well-organized masses, moving with a view to intelligent cooperation, acting under the impulse of a single will, and directed against a definite objective. Means of intercommunication, therefore, as well as methods of observation, are of great importance; and with the telegraph, the telephone, visual signalling, and balloons, the armies of today are at a great advantage compared with those in the middle of the nineteenth century, and military organization has become a science, most carefully studied both by statesmen and soldiers."

These words are not new. They were written over a half century ago by Henderson in his military classic, *The Science of War*. The ultimate aim or "object" of all warfare is to impose your will on the enemy by demoralizing, disorganizing, and destroying without being demoralized, disorganized, or destroyed. Wars of today and the future, in a scientific machine age, are paced tactically by technical progress, and their outstanding features are—and increasingly will be—extreme mobility and concentration of firepower.

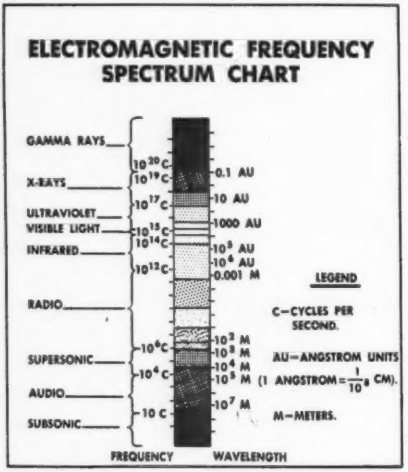
It is quite obvious that if the student of warfare today is to achieve intelligent appreciation of military problems, he must be well aware of the impact on land, sea, and air warfare of the appearance, in practical military form, of the combustion engine, the turbine, the submarine, electronics, and atomic energy. Of these, electronics is of vital importance in every form and theater of warfare and may

In modern warfare, where scientific developments pace tactics, the application of electronics to military uses has served to speed up communications and increase the accuracy and intensity of firepower

even be considered as adding to the land, sea, and air fronts a fourth front—the ether. During World War II, this country alone expended over 2½ billion dollars on electronic development for the armed forces.

The Nature of Electronics

Electronics may be defined as that branch of science and engineering which deals with controlled flow of electrical energy, in the form of free electrons, in an electro-magnetic field. Control generally is performed by vacuum tubes which may be considered as the very heart of electronics. Vacuum tubes are quite varied in form and use: some are large, some small, some glass enclosed, some metal; some are used as receivers, some as amplifiers, some as transmitters, and some as rectifiers. The Japanese made great experimental advances in vacuum tubes in World War II. They pioneered in "strapping" (tubes in cascade or series) in the development of 200 kilowatt high-power output tubes (largest in the world) and in various types of plate coatings to improve control. In addition to vacuum tubes, electronic devices usually include as component parts various combinations of resistors, capacitors, inductors, and transformers.



The different types of electromagnetic energy are best represented, for studying military developments in this field, by an electromagnetic frequency spectrum showing the relationship of frequency and wave length. The boundaries of the different types of energy overlap and are by no means as well defined as indicated in the accompanying chart.

Let us consider the weapons and equipment of modern warfare based on, or improved by, electronics in each of the frequency regions beginning with the *subsonic region.*

In the subsonic region—frequencies below normal audible range—Fessenden in 1898 developed an electromagnetic oscillator for depth sounding to 100 fathoms. During World War I efforts were made to detect ships with this type of oscillator. These devices are now obsolete for military usage and no new developments are in progress in this region of electronics.

In the next, the *audio frequency region*—16 to 10^4 cycles—we find the old horn-type aircraft locators, sonic AA rockets, and sound ranging as an electronic contribution to warfare. Sound ranging was first conceived by a French artillery officer named Captain Bongier in the autumn of 1914. The British first used sound ranging sections at Mont Kemmel in Flanders in July 1915 and within a year had more than 20 sections on the Western Front. These developments are mostly obsolete and the remaining importance of this region is for power distribution, for at about 50 kilowatts, electrons begin to exhibit the desire to leave confining wires and radiation begins.

Electronics made its first contribution to warfare during the Civil War, when the telegraph developed by Morse in 1844

was operated by the Federal government with experts taken from the large commercial companies and used by armies in the field for the first time in history. Remarkable feats were performed in setting up lines during combat as armies moved and in sending messages under fire. Grant was able to maneuver and keep in touch with the progress of his several widely separated forces. Other advances in military communications, such as long-distance telephony and teletype, are also found in the *supersonic region*—10^4 cycles to 10^6 cycles.

During World War I, the French physicist Langevin pioneered the development in this region of the piezo-electric quartz crystal supersonic submarine detector to help combat the German submarine menace. The Navy used an improved submarine hunting device in World War II called SOund NAvigation and Ranging (SONAR) to detect submarines up to 1,500 feet of distance by supersonic wave echoes. Bacteria killing in anti-biological warfare, and supersonic therapy for the wounded are other developments in the *supersonic region*. The Japanese in World War II developed a supersonic death ray device, using their 200 kilowatt output tube and a parabolic reflector to focus the high power output. They claimed the device was able to kill a rabbit at 40 yards in the snap of the finger, and at one-half mile in 10 minutes. However, the device was too cumbersome and was not practically employed. Nevertheless, the idea must not be completely disregarded.

The Radio Frequency Region

Communication has been a leading factor in military success since that far-off day when an aborigine watched behind a hill crest and swung his arms to warn his tribesmen of an approaching enemy. In addition to the telegraph, telephone, and teletype of the *supersonic region*, we have in the next, the *radio frequency region*—10^6 to 10^{12} cycles—the development of standard amplitude-modulated (AM) radio such as SCR-506, frequency-modulated (FM) radio, microwave communications, television, and facsimile. There still will be nothing new in the principle of using every possible means of communication if the day comes when perfected television flashes to our armies the exact appearance of enemy territory or "no man's land," as seen by an "electric eye" from an unmanned aircraft or a missile guided by remote control. But while the principle of their use remains the same, the importance of communication is tremendously multiplied by the increasing complexity and speed of the forces engaged in modern war.

In the *radio frequency region*, we also find these developments: the proximity fuse, which utilizes a small five-tube radio whose emission can be controlled to set off a bomb or shell at a fixed distance from the ground or target; guided-missile control systems of various types; LOng RAnge Navigation (LORAN), in which hyperbolic grid systems from two fixed stations are used for navigation; Direction Finding (D/F) systems, for fixing positions of ships and aircraft after a short transmission by the querying aircraft or ship; the Ground Control Approach (GCA) system for enabling aircraft to land under zero visibility conditions from verbal directions; and meteorology instrumentation for marked improvement in weather prediction.

Lastly, in this region, we have the most important electronic development of World War II in RAdio Detection And Ranging (RADAR). Radar may be defined as the art of detecting the presence of objects by means of radio echoes, of determining their direction and range, and of recognizing their character and employing the data thus obtained for military uses. Thus, aircraft, ships, land masses, cities and other objects can be located at great or small distances at any time of day or

night in spite of any blinding sunlight, fog, or haze which might make visible methods inoperative.

"Heavy seas were breaking over the bows of the USS *South Dakota* and her sister ship, the USS *Washington*, as they plowed through the waters off Guadalcanal on a dark November night in 1942. It was the velvet darkness of the tropics—and the ships were hunting the Jap fleet. But they were not hunting by human eye. The invisible searchlight of American radar was probing the blackness of the night around them. Suddenly the beam picked up a Jap battleship a little more than 8 miles away. The powerful 16-inch rifles were elevated and aimed at the spot where radar said there was a target. The big guns hurled their tons of steel and explosives into the darkness. Seconds later another salvo followed, and the spot disappeared from the radar screen. Before the battle ended, the *South Dakota* and the *Washington* had sunk the Japanese cruisers and a battleship, though no American eye had seen them."

Radar, the all-seeing eye, is credited with having contributed more to the success of the Allies in World War II than any other single device. It turned the tide in the Battle of Britain. It gave the hard-pressed American navy a priceless advantage over the Japanese while our new ships were under construction. It won the Battle of the Atlantic against the German submarine. These achievements in the dark hours when a defeat might have meant loss of the war were actually the margin of ultimate victory. The art of radio detection and ranging was not a startling discovery. The idea evolved slowly out of high frequency radio research, and was developed simultaneously in England, the United States, Germany, and France during the 1930s. It was first used by the British against the *Luftwaffe* on 8 August 1940 and by the United States in November 1941 aboard destroyers.

ELECTRONIC DEVELOPMENTS TO DATE

telegraph	atomic bomb production	proximity fuses
telephone	Radar	magnetic mines
AM radio	MEW Radar	mine detectors
FM radio	AI Radar	De-Gaussing girdles
microwave communications	IFF Radar	electronic calculators
teletype	Loran	electronic gun directors
television	Shoran	electronic torpedo controls
facsimile	GCA	electron guns
wire recorders	D/F	automatic pilots
infrared signal lamps	Radar and radio jammers	remote turret controls
Infrared chemical drying	death ray machine	X-ray radiography
Ultraviolet lamps	infrared jump zone beacons	Infrared night-fighter aircraft detectors
remote control for guided missiles and in	infrared photography	infrared therapeutic lamps

The upper bands of the *radio frequency region* are at present being given the greatest attention in developmental research for future offensive and defensive military applications.

Next in order is the *infrared region*—10^{12} to 10^{15} cycles—which is also very important in the field of electronics. This region includes such developments as: the sniperscope, a sight using a sensitized

pickup of infrared radiations to locate targets at night without giving away the position of the firer; heat homing bombs or missiles which were initially developed by the Japanese but never put into practical use; night-fighter aircraft detectors; night signal lamps and landing zone beacons for airborne troops; infrared photography; infrared drying of scarce chemicals; and infrared therapeutic treatment of wounded.

The *visible, ultraviolet, X-ray* and *cosmic ray regions* contain few new developments of wide military application, although research in the *cosmic ray region* is being carried out by scientists of various nations with a view to future military application. X-rays and ultraviolet rays are used in the treatment of the sick and wounded and we know that both ultraviolet and infrared emanations injurious to the human body are given off on the explosion of an atomic bomb.

The accompanying list of developments (page 26) forms an imposing array of some of the military applications of electronics. However, all of them fundamentally serve but to increase the speed of communication and to control or increase the accuracy and intensity of the firepower of the forces engaged. None of these electronic devices have supplanted man in modern warfare. Manpower is just as vital in waging war today as it ever was; indeed, it may be even more vital. Manpower, therefore, must not be neglected in favor of the so-called "push-button warfare" concept, in which matériel alone is the prime factor in forcing a decision. Greater utilization of electronics in military matériel must be accompanied by greater attention to the training and employment of military men. As the matériel of warfare becomes more complicated and deadly, it should be increasingly evident that the men who employ and maintain this equipment must be more intelligent and better trained.

So far as can be ascertained by the Research and Development Board, the United States is maintaining a fair margin of superiority in virtually every technical area of weapon development. This Board, a vital link in our national security chain and a part of the National Military Establishment, is our means of keeping abreast of scientific discoveries and of finding military applications for them.

First Report of the Secretary of Defense

With scientific progress continually changing, human intelligence must also change. Dynamic human qualities of imagination and curiosity, initiative and willingness to assume responsibility, together with alertness and flexibility, are required.

The army must become the center of a broad and free flow of ideas based on rational foresight, scientific research, and a knowledge of foreign ideas and accomplishments.

General de Lattre de Tassigny, France

Need a Training Film?

Colonel W. W. Jervey, *Signal Corps*
Chief, Army Pictorial Service Division

DO YOU need a training film? If you do, visit the nearest Signal Corps Film Library. There is one at practically every military post, camp, or station. Tell the officer or civilian in charge of the library the type of film you want. If there is a Signal Corps film on the subject, he will get it for you. He may have to order a print from the Central Film Library at Army Headquarters if you want something special. The Central Library might have to requisition from the Signal Corps Photographic Center in Long Island City, New York. If your need is extra special, with very limited distribution, it is possible that Signal Corps Photographic Center would have to get a laboratory to "process" a new print. But if it is an approved United States Army film, and you need it, you will get what you want.

On the other hand, if the man at the library says he cannot help you, that is a different story. He will not be able to help you if the Signal Corps has never made or adopted the film you want. But if you need such a film, other instructors may need it too. Why not do something about it?

The Signal Corps produces approximately 100 new training films a year at its studios in Long Island City. On the basis of requests submitted by the Chiefs of the various Administrative and Technical Services, the Chief, Army Field Forces, and the Directors of the General and Special Staff Divisions, the Chief Signal Officer prepares and defends before Congress a budget for the production of these new films. The production program for each year is reviewed and approved by the General Staff. This program, with new film subjects listed in order of priority, is published by The Adjutant General.

Acting for the Chief Signal Officer, the Chief, Army Pictorial Service Division supervises and controls production and distribution of all training films for the Army. Actual production is accomplished at the Signal Corps Photographic Center in Long Island City. This establishment is a Class-2 installation under the control of the Chief Signal Officer.

Although the Signal Corps got into the film business back in 1917, it did not acquire a modern motion picture studio until early in 1942. Since then, the old Paramount East Coast Studios, together with adjacent properties, have been known as the Signal Corps Photographic Center, or less formally as "SCPC" or "the Center." At the height of its activity during World War II, the Center employed some 2,300 persons, both military and civilian. At the present time, slightly less than 1,000 individuals make up the technical and administrative staffs.

The Commanding Officer, Colonel Charles S. Stodter, operates the largest, best-equipped, and best-staffed motion picture production establishment east of

Hollywood. The Center is capable of producing any type of motion picture from the "nut and bolts" type to highly dramatic, attitude-building films. The average product, however, is somewhere in between these two extremes. A recent release, TF 30-1494, "Production of Combat Intelligence," is a good example. It does not fall in the "nut and bolt" category, nor does it make a "cloak and dagger" man out of the Assistant S-2. It is a simple, straightforward, but fast-moving explanation of how military intelligence is obtained and used in combat. Since the motif of the film stems from an imaginary combat situation, "live action" is employed effectively to give movement, continuity, and a suggestion of suspense.

Before we define "live action" and discuss production procedure, it might be well to find out why the Center made the film in the first place. As far as the Signal Corps is concerned, it all started in the Intelligence Section of the Ground General School at Fort Riley. Actually, it may go back further than that. But the Ground General School picked it up and carried the ball. The Director of Intelligence and the Director of Organization and Training, General Staff, United States Army, liked the idea, as did the Chief, Army Field Forces. With the backing of these agencies, "Production of Combat Intelligence" was placed on the training film production program with a relatively high priority.

But even the top spot on the program does not assure production unless the initiating agency forwards an outline on the subject to the Chief, Army Pictorial Service, within a reasonable time after publication of the approved list of titles.

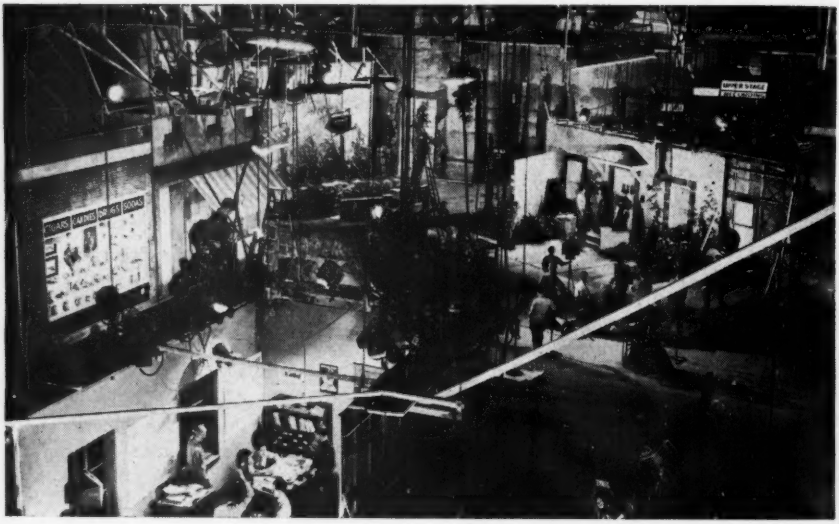
The services of a technical advisor are also required. It is the responsibility of the initiating agency to assign to this duty the man best qualified on the subject and to make him available to the Signal Corps when needed. Delay in making technical advisors available or changing advisors during production is costly to both the initiating agency and the Signal Corps.

When an outline is received, the Chief, Army Pictorial Service, transmits it, together with other pertinent information as to the type of film desired, to the Signal Corps Photographic Center for the preparation of a scenario. At the Center, the project is assigned to a writer. This writer, working under the general supervision of a project officer or producer, digests the contents of the outline and the information furnished him by the Chief,

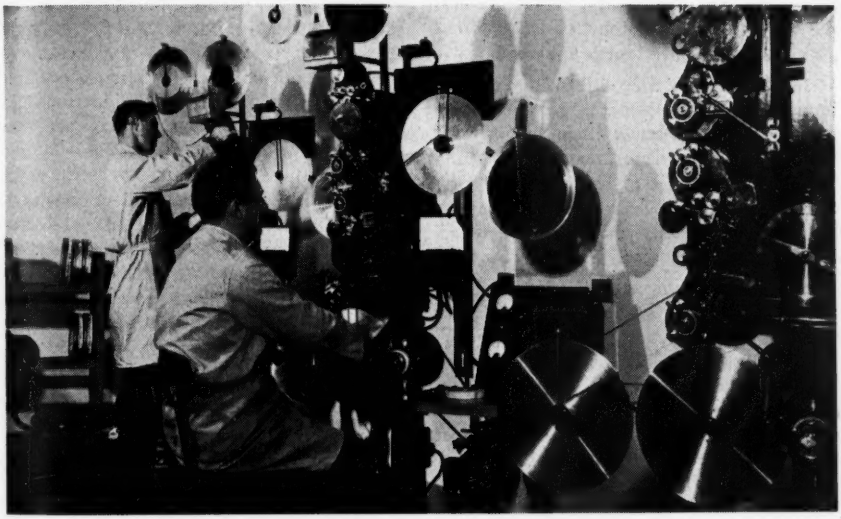
At its Long Island City, New York, studios—"the best-staffed motion picture production establishment east of Hollywood"—the Army Signal Corps produces approximately a hundred new training films each year

Army Pictorial Service. He becomes familiar with related material such as that found in Technical and Field Manuals and other official publications on the subject. Then come conferences with the technical advisor and his associates. On the basis of this research, the scenario is written.

Multiple copies of the completed scenario are forwarded by the Signal Corps to the initiating agency and other interested organizations for review. If approval is obtained, the Center is authorized to begin production. Sometimes, however, a complete rewrite of the scenario may be necessary. This happened with "Production of Combat Intelligence." Once in a while, a project is cancelled after several attempts at preparation of a satisfactory scenario have failed. This happened with a proposed companion film to "Production of Combat Intelligence," tentatively



Nearly 1,000 persons are employed at the Signal Corps Photographic Center in producing about 100 training films each year for the Army. Above, a view of the main stage at the Long Island City studios. Below, cameramen shooting a scene for the training film "Prisoners of War For Intelligence."—US Army photos.



Approximately 2 million feet of film are processed each month at the Signal Corps studios in making motion pictures for the Army. Above, laboratory employees operate a contact printing machine. Below, some of the reserve stock of Army training films in the film distribution warehouse at the Photographic Center.—US Army photos.

titled "What, When, and Where." But the revised script for "Production of Combat Intelligence" made the grade.

Back at the Center, all technical personnel responsible for the production of the approved scenario, including project officer, writer, director, cameraman, and the technical advisor, establish the production schedule. Sets are constructed. Actors are selected. Uniforms are fitted. Equipment is collected. Shooting begins.

If you have never seen the Signal Corps Photographic Center in operation, it is worth a visit. Even "visiting firemen" from Hollywood are impressed these days. The main stage occupies the major portion of the first floor of Building A. It covers an area of approximately 220 feet by 120 feet, or more than a half acre. A ceiling height of 40 to 60 feet assures adequate space for electricians and prop men to operate hundreds of huge lights and backdrops of all types. Complete city blocks as well as hundreds of other huge sets have had their day on Stage A.

But Stage A is not sound proofed. When "live action" sequences are photographed and recorded here, bells ring and lights flash throughout the entire building, demanding silence. Even the elevators stop running. Most "live action" sequences are shot, however, in the three sound stages on the floor below. But the sound stages are smaller than Stage A and occasionally the size of the set demands the use of the main stage.

Everything must be right when the camera starts rolling. This is particularly true for training films, for the picture shows "how to do it." The dialogue or narration simply supplements what is seen by the eye. Of course, there are takes and retakes, particularly in "live action" sequences, for actors make mistakes. But there must be shots from several angles to give variety and movement to the finished product. Some pictures require special camera effects. These are planned carefully and in detail before a single frame is exposed. Equally important are the steps in planning, constructing, and photographing models, while motion picture animation demands a technique and an art all its own.

During the winter months, it is far more economical to utilize the production stages at SCPC than to brave the uncertainties of weather. But many training film sequences must be photographed on location. Camera crews are sent from the Center to various parts of the country to obtain the necessary photography. As a rule, oversea commands accomplish special photographic missions upon request. But occasionally, it becomes necessary for SCPC cameramen to make trips outside the continental limits of the United States to get motion picture coverage essential to the production of special films.

Once the photography has been completed, the project is taken over by the film editor. He combines live action scenes and other original photography with animation sequences, titles, inserts, and stock footage to match the approved scenario.

To the film editor's final product, the sound department adds off-stage narration, sound effects, and music. From separate picture and sound negatives, the big modern film processing laboratory makes the first complete print. This "answer print," as it is called, is sent to Washington for review by the initiating agency and the Army General Staff. Answer prints are also reviewed by the Chief, Army Field Forces and the schools responsible for the doctrine involved. If the film is approved without alteration, the project is turned over to the Distribution Division of the Signal Corps Photographic Center. Here, the number and type of prints needed in the Zone of the Interior and in oversea commands are determined and print orders placed with the laboratory.

The production of motion pictures is a complex and expensive operation. Experienced and talented technical personnel is the major requirement. But equally important is the availability of large, well-equipped studio and laboratory facilities. Located in Long Island City, the SCPC is also able to take advantage of readily available actors for speaking parts, the adequate rendition of which is so important to live-action sequences. The services of specially qualified writers, directors, cameramen, and other technical personnel can be obtained for short periods of time as needed, making it unnecessary to carry such highly paid talent full time.

The value of the motion picture for use in training, as well as for public information, troop orientation, and historical record, was appreciated by military men during World War II. The training film is the instructor's best friend. It is a great timesaver. Regardless of space, time, and weather, an expensive demonstration can be staged over and over again on the screen by the simple process of rethreading the projector. By means of animated and model sequences, the hidden operations of a minute mechanism can be enlarged to heroic proportions while intricate detail is depicted and explained in simple terms. Dramatic action and emotional appeal can be used to build attitudes more effectively and in much less time than by any other medium.

No one except an army engineer ever heard of a timber trestle bridge until some 30-odd green troops and an equally colorful sergeant went out and built one after seeing a 40-minute training film on how to do it. Today, the story is a cherished antecdote. But it actually happened.

No one knows all the answers in training film production, distribution, and utilization. After years of experience in making and distributing motion pictures of all types, the Signal Corps is still seeking better ways of making better training films. More than two thousand training film subjects are available for use. But if the one you want has not been made, do something about it.

For every day of training we undertake in peacetime, we may save weeks and months of war.

Former Secretary of War Robert P. Patterson

All training must stress that every soldier regardless of assignment has as his primary duty the obligation to fight. Individual training has two purposes: first, to teach men to fight; and second, to teach men to instruct others how to fight. Unit training has three purposes: first, to teach individuals how teamwork produces an effective combat unit; second, to develop cadres on which fighting units can be built; third, to produce smooth working units which are ready for combat in the minimum time.

General Jacob L. Devers

THE STRATEGIC IMPORTANCE OF WESTERN EUROPE

F. O. Miksche
Formerly Lieutenant Colonel, Czechoslovakian Army

The views expressed by the author of this article are his own and their publication does not constitute endorsement by the Department of the Army or the Command and General Staff College.—The Editor.

General Strategy

IF MANKIND fails to escape the disaster of a third World War, two coalitions will face each other in the conflagration. These coalitions differ not only in their social structure but also in many other respects. The East—the Soviet Union and her satellites—are geographically isolated between the Baltic coast, the Arctic Sea, and the Pacific Ocean. The Anglo-Saxon powers, on the other hand, are the absolute rulers of the world's seas and thus of the main traffic routes of world trade. They are technically and economically superior to the East, and this circumstance is a guarantee that they will permanently maintain their initiative not only on the oceans but also in the air. The East, though technically weaker, would be the stronger as regards manpower. To sum up, a third World War would be a war between a vast, but geographically isolated, land power, and the powers which have particular superiority of the sea and the air.

These contrasts reveal the general strategy of a potential conflict between East and West. The Soviets would have to base their strategy mainly on their superiority in manpower. They would have to use their large land armies to occupy the air, land, and sea bases of the Western Powers, where this could be achieved by land routes. But such an apparently offensive strategy would, in the end, only lead to a defensive result. Doubtless, such a course of action would eliminate many air and sea bases of the Western Powers from the actual borders of the Soviet Union. For a time, the armed forces of the Anglo-Saxon powers would be deprived of those fields of battle where they could make their material superiority felt. Practically, this would mean the conquest of Scandinavia, Skagerrak and Kattegat Straits, Western Europe, and the Atlantic coast. Perhaps it would also mean the conquest of Gibraltar, the straits between Sicily and North Africa, the Dardanelles, Suez, and the Persian Gulf. Guerrilla wars in Eastern Asia might cause further difficulties to the Western Powers.

Vast as this possible expansion of the East may seem, once the Red Army reached the shores of the open seas it would have exhausted all its offensive possibilities and could not wrest a strategic decision without technical superiority. With manpower, it could seize land, but it could not rule the sea and air. Control of the sea and air would be necessary before the Soviets could achieve final victory. Despite initial setbacks, the free world would still remain a powerful adversary of Moscow, both militarily and economically. The free world could still base its strength on the whole American Continent, the British Isles, the major part of Africa, Australia, and other areas.

Being weaker in manpower and stronger

in production, the Western Powers would logically pursue a quite different strategy. Their strategy would necessarily be based on their technical and material superiority. But can this by itself decide the conflict? Air bombardment, however powerful it might be, would scarcely stop the Red invasion. In the tactical sphere, air attacks are like the preparatory fire of artillery. They only lead to a decisive result if they are followed up by an infantry assault. Only permanent seizure of the ground by troops can change the comparatively short, paralyzing effect of an air bombardment into decisive results. The situation is different in the strategic phase of the air war, which consists of attacks deep into the hinterland of the enemy when an immediate occupation is impossible. During this phase, the enemy is always able to repair a considerable portion of the damage caused. The effect of air war is by no means sudden. It causes a slow attrition of the enemy's capacity to produce, and this is felt only gradually and after some lapse of time on the battlefield. Under whatever aspect we consider the problem of war against the greatest land power of the world, it will doubtlessly require great land armies. Where are the Western Powers to find the necessary manpower if the whole of continental Europe succumbs to Soviet occupation?

The problem of achieving a strategic decision by technical superiority alone is closely related to the size of the space where it is to be applied. The bigger the space, the more material superiority will be dissipated in space and time. Thus, it is by no means impossible that a power which is absolutely superior from a technical standpoint will be comparatively inferior in many places. In other words, it is impossible to be everywhere at the same time, and it seems practically impossible to dominate a big area like Eurasia with machines alone. Doubtless, under these circumstances, a war between East and West would change into a long, drawn-out struggle between manpower and production. But we know that everything has its limits. Nobody can now give a correct answer to the problem of what degree material superiority can compensate for inferiority in manpower, or vice versa. Let us therefore try to throw some light on this question by comparing the productive capacities of the Anglo-Saxon world with those of the Soviet Union, and by comparing the manpower of the West with that of the Soviet Union. This comparison may result in important conclusions at the end of our study. It must, however, be pointed out that strategy consists not only of calculations and material factors but also of moral and psychological elements. The latter belong to the domain of feeling and are therefore imponderable.

According to this former officer of the Czech Army, a third World War would pit the manpower superiority of the East against the industrial superiority of the West, with Europe as an area vital to each side

Production and the Air War

World War II raised the economic and industrial strength of the United States to a level unprecedented in world history. This flying start cannot be exceeded by any other power in our age. The key industries of the United States today produce half of the total world production. In case of a conflict, this production would be further strengthened by the resources of the British Commonwealth. The Soviet Union could never achieve more than one-fifth of the joint output of the

Anglo-Saxon industries. But the ratio would be different should Moscow succeed at some future date in dominating the whole of Europe. Though the Soviet Union could never attain the productive capacity of the Anglo-Saxon world, the economic and technical position of the East would be considerably improved by the cooperation of the industries of Germany, the Benelux countries, and France. How big would the productive capacity of the Soviet Union be in such a case? In solving this riddle, the results obtained by Germany during World War II could supply a key. As is known, Hitler's armies at that period occupied the same areas which would now succumb to the Soviets. It would be erroneous, however, to assume that the Soviets could achieve the same maximum output that the Germans did. Since Hitler's days, Europe has been greatly impoverished, and Moscow will never attain the degree of organizing ability shown by the industrial leaders of the Third Reich. But there will be only a small margin of error in our estimates if we assume that a Soviet-occupied Europe could still achieve 50 percent of the German war production. What output would be achieved in that case by joint Soviet and European industrial production and what would be its ratio to Anglo-Saxon production? This is certainly an important problem.

Let us take, as an example, the production of the two most important arms—aircraft and tanks. The annual peak production of the powers participating in World War II was as follows:

	Aircraft	*Tanks*
United States	96,370	29,500
British Commonwealth	33,398	22,819
Soviet Union	30,000	30,000
Germany	39,807	18,002

Note: Official Soviet propaganda quotes an annual aircraft production of 40,000. On the other hand, the Germans assert that Moscow never produced more than 30,000 planes. On the side of caution, we prefer to believe the German figures. It should also be stressed that the output figures of the Soviets refer to a time when the western industrial districts of Russia were occupied by Hitler's armies. The German output figures are those of 1944, when the industries of the Third Reich suffered heavily under the bombing attacks of the Allies.

If we are to consider the quoted figures from the point of view of a potential conflict between East and West, we should add half the output of Germany to the output of the Soviet Union and then we can compare them with the joint British-American output. Thus, we arrive at the following picture:

WESTERN POWERS

	Aircraft	*Tanks*
United States	96,370	29,500
British Commonwealth	33,398	22,819
Total, Western Powers	129,768	52,319

EASTERN POWERS

	Aircraft	*Tanks*
Soviet Union	30,000	30,000
50 percent of German production	19,903	9,001
Total, Eastern Powers	49,903	39,001

Accordingly, the West would annually produce about 130,000 aircraft and the East about 50,000. Tank output would be 52,000 for the West, and 39,000 for the East. Probably an analysis of other industries would lead to different results, far more unfavorable to the Soviets. This would affect in particular precision instruments, a field in which the West is far advanced. These special industries were always a weakness of Soviet production. It is also important to know that in quality Soviet production is inferior to the production of the Anglo-Saxon countries. As to the quantitative output, we shall be

close to reality in assuming that Soviet production initially could reach only one-fifth of the Western total. Through systematic exploitation of the occupied European industries, this might rise to about one-third of the Anglo-Saxon output. So Moscow would become a materially more powerful enemy than Berlin, since the industries of the Third Reich never achieved more than about one-fourth the rate of Allied production.

Logically, this trend of thought leads us to another problem. It is the impact of an air war on the battle of production. The Soviets can seriously threaten only the British industry of the Anglo-Saxon Powers. The industries of the United States and the Dominions are beyond practical range of Soviet aircraft. But what would be the strategic air position of the industrial areas within the boundaries of the Soviet Union working for the Eastern Powers, assuming that the Red Army should succeed in occupying Western Europe and in penetrating deep into the Middle East? Considering the problem of Soviet industrial areas, there are three factors which would tend to reduce the effectiveness of air attacks:

1. One of the most important characteristics of Soviet industrial life is its decentralization. Material superiority, particularly in an air war, can only achieve a decisive effect if it is applied in concentration against concentrated targets. Material superiority is very difficult to apply when there are many targets dispersed over large areas. This can lead under certain conditions to a dissipation of effort, so that the damage inflicted on the enemy is in no proportion to the costs of the operation. It amounts to the same as if one tried to shoot flies with a pistol.

2. The relative effectiveness of air attacks is the next factor. In this connection the successes of the air war against Germany are very instructive. The 120,000 tons of bombs dropped over the Ruhr destroyed 70 percent of the dwelling houses but put only 18 out of 70 coal mines out of action for a long period. The Allied air attacks destroyed only 30 percent of the German industrial plants entirely; 20 percent were stopped only partially or for six months; 50 percent of the blast furnaces and steel mills remained intact. All these air attacks were aimed against a highly-centralized industrial power and carried out over comparatively short flying distances. Barely 500 to 700 miles separated the British Isles from the most important target areas. In case of a war against the Soviet Union, the flying distances from the Middle East bases to the industrial areas of the Ural would be 1,500 to 2,000 miles. From the British Isles, to Moscow or the Donetz basin coal field, the distance is 1,700 miles. Isolated raids are nothing but small episodes in a great war and cannot bring forth any decision. Possibly the atom bomb may change the picture, but a positive statement on this point cannot be given.

3. An air war, like any other war, is only effective when the right target is hit at the right moment. Thus, a well-working intelligence service is an essential condition for success. How does this apply as regards the Soviet Union? For the last 30 years, that country has been as hermetically closed to the world as Tibet once was. Communist propaganda proclaims to the world the rise of new towns and industrial areas of which we know very little, not even whether they really exist. Our reports about Russia are as scarce as those about Africa in Livingstone's and Stanley's time. In the air war against Germany, the task of intelligence was comparatively simple. This was a consequence of trade relations over many years, during which the economic structure of the European countries became generally known.

The location of the most important automobile factories, steel plants, and coal

mines was no secret. It would be very different in an air war against the Soviet Union. In order to attack the industrial areas of Asia, Siberia ought to be rediscovered, a difficult task under present conditions. Without a good intelligence service, many attacks would strike into the void, particularly if they were directed against a decentralized industrial country.

The problem presented by the industries of occupied Central and Western Europe is quite different. They are located much nearer to the British Isles, which would play the already traditional part of a giant aircraft carrier in a future war. The short flying distances make the maintenance of continuity of action much easier, and the centralized economic structure of Central and Western Europe is a further guarantee of the effectiveness of the attacks.

If the Soviets should occupy Western Europe, this means that their Air Force could operate against the industries of Great Britain from the Channel coast. It must even be admitted that in such a case the position of the Soviet air arm would be more favorable than that of the Western Powers, for the simple reason that London is closer to Calais than the Ruhr is to the British air bases. It is probable that Britain would suffer more from air attacks in a new war than she did during the last one, because techniques, particularly rocket research, have made great strides since the end of World War II. It could happen, in a gigantic air combat, that the Soviets would be able to paralyze British industries and the Western Powers would be able to obliterate the continental industrial areas. Such a development, however, would have no substantial influence on the outcome of the battle of production. If we subtract the production of the British Isles from the Western potential, and the continental industries from the Eastern potential, the one to three ratio remains unchanged.

Continental production, however, is much too important to the Soviets to allow them to expose it to such a risk. As already mentioned, these industries would be given the important task of filling the big gaps in Moscow's production of such items as precision instruments, optics, radios, and ball bearings. Nothing would be more natural for the Soviets than to move all installations of Western and Central Europe deep into Russia in order to protect them from the effect of air attacks. In this field, the Soviets have gained important experience, both during the war and later when they systematically looted the countries occupied by them. During the war, about 1,300 plants were evacuated to Siberia. From the Leningrad district alone, 75 percent of all industrial plants were moved to Asia. The transferred Kirov works are alleged to have produced 18,000 tanks in 1942, only one year after evacuation. The Stalin works, transferred from Moscow, produced 35,000 tanks. The Soviets even succeeded in moving heavy installations of the key industries, such as blast furnaces, steel mills, and mining machinery. Naturally, we must judge these Soviet statistics with some reserve.

A transfer of continental industries would certainly be hampered by many difficulties. The primitive system of transport in the Soviet Union would be one of the greatest obstacles. However, such a maneuver could be carried out at least partially. There are, of course, not only advantages but also disadvantages. On the asset side, there is the protection of the industries from air attacks and their proximity to the power, coal, and oil resources of Asia. On the other hand, the long route the products would have to travel to the battlefields must be considered a liability.

Should the Soviets decide on this industrial strategy in war, there would be

only two big arsenals in a third World War: for the West, America; for the East, Siberia. The outcome of the battle of production would depend on the output of these two industrial areas. From the standpoint of air strategy, the geographical position of the Soviet industries would certainly be far more unfavorable than that of the United States, where the industries are almost entirely beyond the practical range of the Soviet air arm. But it would be a mistake to expect any sudden decisive result from an air war. Soviet production would only tend to decline slowly. At the beginning of hostilities, Moscow would be able to wage war for a considerable time with German material left over from World War II. Since 1945, while most of the Anglo-Saxon war industries were being demobilized, the Soviet Union has been producing new weapons. The Western industries could reach their peak only after some months. If we consider all these arguments, it becomes evident that the battle of production between East and West would be a very lengthy struggle.

The Battle of Manpower

The Soviet Union alone has nearly 200 million inhabitants. Moscow's satellites have 96 million more, and the Red Chinese government controls about 120 million persons. Altogether, this amounts to 416 million. The inhabitants of the West, that is, the United States, the British Commonwealth, and South America, number about 600 million. It would be difficult, however, to draw an exact balance of the ratio of manpower between East and West today. Particularly in Asia, we do not know at present where many nations would stand in case of war. Others, for instance the Chinese and the Germans, may be divided between the two blocs. To which bloc would the 17 million of the Scandinavian countries be added? Should Europe be overrun one day by the Soviets, we should have to add 139 million more inhabitants to the East.

Naturally, such a general analysis gives only a superficial picture. It is certain that a future war would become an intercontinental civil war. Both contestants, the East and the West, would have followers in every country. Furthermore, it must be stressed that each country, and consequently its population, is of different value according to race, geographic position, and economic structure. Therefore, it is better to draw a manpower balance between East and West from the following factors:

1. Fighting manpower.

2. Populations which are important from the point of view of war economy and which can be used in industry and agriculture.

3. Nations which are inferior from the military and economic point of view.

Let us consider first the problem of the East's fighting manpower. According to some sources, the Soviets could put the following forces in the field during the first year of war:

250 infantry divisions.

150 motorized infantry divisions.

100 armored or mechanized divisions.

10 airborne divisions (without transport aircraft for all of them).

20 artillery divisions.

15 to 20 air fleets, with 14,000 aircraft.

If we add 100 divisions supplied by Moscow's satellites in Europe and 100 Red Chinese partisan divisions, we would theoretically arrive at about 725 divisions of fighting manpower for the East. This is certainly an impressive strength, which, if backed by Communist organization in Europe and Asia, would be a very serious danger for the Western Powers. But we must still consider the following circumstances:

1. It remains more than problematical whether the industries of the Soviet Union

would be capable of equipping this enormous mass of troops and of supplying them with material during a war.

2. Contrary to Communist propaganda, the Red Army in the last war proved itself an inferior military force compared to the standard of the German Army. German troops held their own everywhere when they only had to face a threefold or fourfold superiority. In spite of their qualitative superiority, the Germans were unable to wrest a decision in the vast spaces of Russia from an enemy so much stronger numerically. This example certainly deserves our attention.

3. The reliability of Soviet satellite armies in Europe is more than doubtful. The same can be said also of the potential reliability of the Red Army. It is no longer a secret that the German troops were greeted as liberators in the Baltic States, the Ukraine, and many other areas of the Soviet Union. The general mood changed later, but this was not the result of love for the Communist regime but a consequence of the ruthless requisition of peasants and of the senseless cruelties of the S. S. Troops. The story told in many Central European countries, that Stalin committed two basic mistakes, is perhaps not altogether unfounded: he has shown the Russians to Europe and Europe to the Russians. Today, the Red deserters number hundreds of thousands and popular discontent in the Ukraine and other parts of the Soviet Union is considerable. Neither should it be forgotten that the war against Germany was a national war against an almost traditional enemy. It is questionable whether the Russian people would show the same strength as they did against the Germans in a war against the Anglo-Saxon world.

The real value of the satellite nations consists only to a minor extent on their use as fighting manpower. They are far more important for the East as working manpower. Technically highly-developed Germany, France, Belgium, Holland, and Czechoslovakia could supply millions of trained technicians, engineers, radio mechanics, and many other specialists in which the Soviet economy is very deficient. From the agriculturally highly-developed Danubian countries, Moscow could also recruit important labor for food production. Hitler employed 8 million foreign workers in the Third Reich. Dispersed throughout the enormous territories of the Soviet Union, watched by the all-powerful police of the Communist State, and isolated from the outer world, these foreign workers would hardly be capable of organized rebellion. In reality, the Soviet Union could use, either militarily or economically, all nations within her sphere. Only a very few distant Asiatic nations would be useless to the war effort for ethnographic reasons.

How would the problem of manpower work out for the West? During the last war, the United States mobilized 11,000,000 men, but only 7,700,000 of them could be integrated into the land and air forces. The extended lines of communication had to be guarded by 1,750,000. If a greater mobilization reached deeper into the human reservoir of the United States, production would suffer. Altogether, the United States organized 97 divisions and the whole British Commonwealth only 68 divisions, which brought the total number of Anglo-Saxon land forces to 165 divisions. Considering the high population of these world powers, this is a surprisingly small result. What is the explanation? A very great portion of the population of the British Commonwealth cannot be mobilized for war economy or military purposes because of ethnographic reasons. This is particularly so in the case of colored peoples. India, with a population of about 400 million, mobilized only 16 divisions. The British colonies mobilized only two divisions. In reality, the British Commonwealth can only count on 75 mil-

lion, which is the number of the inhabitants of the British Isles and the white peoples in the Dominions.

If it were necessary to distribute the 165 Anglo-American divisions between three theaters of war in a future conflict—that is, Europe, the Middle East, and the Far East—only 50 to 60 divisions could be spared for the defense of the European Continent. This is a wholly inadequate force for the fulfillment of this task, which requires at least 120 to 150 divisions. An offensive strategy against the Soviet Union using less than 300 divisions is out of the question. The Germans attempted it with 240 divisions and were stopped at Stalingrad.

This much more unfavorable position of the West in respect to fighting manpower cannot even be balanced by the possible assistance of South America. Only Western Europe can tilt the balance in favor of the Western Powers. This trend of thought brings us back to the strategic significance of Europe: in spite of her impoverishment and her present demoralization, she is still of decisive military value. For the West, Europe's importance lies in her supply of fighting manpower. For the East, her importance lies in her contribution to the East's war economy. Should the Anglo-Saxon powers be able to assure Western Europe for themselves, they would not only acquire much manpower, but they would have a much better geographical position. The loss of Europe, on the other hand, would mean a prolongation of a war for many years. It would also spell the end of European civilization, since very little would remain after years of occupation and an air war.

But this study may also be important for other reasons. We have seen that everything has its limits. Even the productive possibilities of the United States may be far less superior than many of us frivolously assume today. It will be wiser to start from a realistic basis than to place all of our hopes in the unproved effect of atomic bombs and radioactive clouds.

The difficulties which have arisen in the stabilization of economic forces of western Europe have naturally tended to impede the creation of a Western Bloc, granting that such a Bloc is politically acceptable to the nations concerned. Until the muddy political waters have been cleared, the dependency which can be placed upon the manpower resources of Germany and Spain will remain in doubt. The situation has been one involving conditions quite favorable to the various moves made by Russia in its bid for world domination, though perhaps a situation which was inevitable. Should, however, European cooperation in the economic and military field become a fact, time will work fast against the interests of the Kremlin. This, and nothing else, is an explanation for Stalin's policy. A united Europe would spell the end to Communist dreams. In war or peace, the unification of Europe would be an effective dam to Soviet conquest or infiltration. Therefore, the Soviet Union will oppose the unification of Europe, whereas it is to the vital interest of the West to press for it.

Adequate defense is a limited objective; beyond its attainment is a greater goal—the establishment of enduring international peace. In lives, in money, in resources, above all in the furtherance of human betterment, the prevention of war pays vaster dividends than the winning of war.

General of the Army Dwight D. Eisenhower

Demobilization Problems of World War II

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Part I
Extra-Military Factors of Demobilization Planning

ANY discussion of the demobilization of the Army of the United States after World War II must be prefaced with an analysis of the extra-military factors upon which the demobilization plans were based. It was the responsibility of the President to initiate planning, on a national level, for coordination between the various governmental agencies concerned with demobilization. It was the function of the Executive Branch to accomplish demobilization of the armed forces in such a manner, at such a rate, and to such an extent as to realize the following objectives:

1. Armed security.
2. Industrial security.
3. Efficient and rapid manpower readjustment.
4. National and service morale.

The President was assisted in the formulation of the basic directives by a committee of advisors from the various departments of the government, including the armed forces. The recommendations of this committee, as approved by the President, reflect the strategical and political situation within which the administrative details were developed.

On 6 July 1942, President Roosevelt authorized an informal conference on postwar readjustment of civilian and military manpower. The members of this conference had a wide range of experience and interest, and included authorities from the armed forces, Veterans Administration, War Manpower Commission, and other related agencies. On 30 June 1943, this conference forwarded its report to the President. As an expression of national policy, the conclusions and recommendations of this report were guides to the War Department in its planning for the readjustment and redeployment of the Army of the United States.

The need of the country to continue to provide for adequate armed security in view of the uncertain world conditions at the termination of war should be accepted as the prime determining factor in arriving at plans for demobilization. The extent and rate of demobilization should be such as to assure a margin of safety in maintaining the armed forces at the strength required by military necessity.

In modern warfare, military strength is so largely dependent upon industrial strength that the two must always be considered in relation to each other. Continuing national safety depends upon preserving a framework of war industry able to supply arms and equipment needed for the armed services after the war, and also upon plans for rapid return to war production, should such be required.

Manpower readjustment is complicated and difficult, embodying as it does many different types of persons and problems.

It involves the demobilization of those in the armed services, the withdrawing or discharge of persons from the war production industries, the release of persons from government employment, and the relocation of all of them in peacetime civilian employment. The methods and purposes of a readjustment program at the end of hostilities are less clear and less understood than those involved in military and industrial mobilization for war. The ideas and emotions of the individuals and groups involved are also likely to be less definite and less unified. It is the task of the federal government to provide the general leadership during this transition period and to create the atmosphere and the incentive that allow the system of free enterprise to assume its full place in a peacetime economy.

Military demobilization is a special and important phase of the general readjustment from conditions of war to conditions of peace. Smooth and rapid military demobilization is regarded as one of the desirable objectives for any postwar readjustment plan. Many good reasons exist for desiring a relatively rapid rate of military demobilization. Personnel in the services should have an opportunity, at least equal to that of those who have been engaged in war production, to secure such employment as is available during the readjustment period. Hence, they should not be handicapped by delay. Furthermore they will naturally be eager to return to their families.

Whether demobilization proves successful from a social point of view, or whether it brings with it a chain of difficulties, will be largely determined by the ability to bring about rapid and orderly conversion of our industries. The fate of the demobilized soldier or sailor is inextricably tangled with the fate of the general industrial population. If men are discharged from the armed services into an industrial society that is aimless, idle, or confused—that rapidly fluctuates through stages of boom, panic, and depression—a double burden is thrown upon the veteran, first, that of fighting a war, and then that of languishing in a sterile peace.

Upon initiation of the readjustment program, the Army is immediately faced with a problem in the maintenance of morale. If hostilities have completely ceased, one of the principal motivating influences has evaporated and the interests of most soldiers turn toward a return to civilian life. Even in partial demobilization, a large segment of the Army, those eligible for separation, are concerned mainly with non-military objectives. Accordingly, upon initiation of readjustment, the military force is divided into two general groups. First, those who must remain in the service for occupational duties or further operations; and second, those eligible for separation. The principal morale problem of the readjustment process is that of keeping each group from destroying its own morale. But more important is the problem of keeping the group awaiting separation from destroying the morale of those retained for further service. Furthermore, the maintenance of public morale is parallel to and closely dependent upon the military problem. It is possible that long-range strategy may force subordination of immediate military considerations to civilian interests.

In both the planning and the execution of American demobilization in World War II, there were many extra-military factors which had to be considered in addition to the strictly military aspects involved

In recognition of the foregoing basic

problems and objectives of successful demobilization, the President's Advisory Committee recommended certain fundamental operational principles and practices covering the more controversial problems. These recommendations, as matters of national policy, became guideposts for the War Department demobilization planners. They covered:

1. Scope.
2. Method of demobilization.
3. Method of selection for discharge.
4. Pre- and post-discharge benefits and assistance.

The scope of military demobilization should go further than the mere process of terminating the service of an individual in the armed forces. In the broad sense, the process does not end when the former soldier boards the train to go home. Demobilization in the broad sense should include:

1. Review and check-up of the individual's record in the service and other records, particularly with respect to education, training, occupational preferences, and acquired specialties.

2. Access to information about employment opportunities.

3. Opportunity for educational guidance where needed and desired.

4. As a final goal, assistance in the relocation of the man in the existing peacetime society, including his placement in useful productive work.

There are two types of military demobilization, classified as to the basic unit of demobilization. These are defined as follows:

1. *Unit demobilization*—the reduction of the Army to prescribed strength and composition, by inactivation of units and organizations, without regard to the characteristics of the individuals composing those organizations. This procedure usually consists of transfer of the unit intact to the station of inactivation, where demobilization is accomplished, and whence personnel proceed to their homes as civilians, or on an inactive status. The composition of the unit is not altered for demobilization purposes.

2. *Individual or selective demobilization*—the reduction of the Army to prescribed strength and composition by the release of personnel as individuals, in accordance with established criteria determining the relative eligibility of each individual for discharge.

The committee considered that selection for demobilization should be made on the basis of the following criteria having to do with the status of the individual. These criteria made unit demobilization impracticable.

1. *Service*—character of service should be considered as a factor in determining priority in demobilization. Men whose service has been especially arduous either in length or character should be demobilized before those whose service has been restricted or those more recently inducted.

2. *Domestic status*—the following order of procedure in demobilization was recommended:

a. Those married, with dependents.
b. Those married, without dependents.
c. Those unmarried, with dependents.
d. Those unmarried, without dependents.

3. *Occupation*—situations will arise during the readjustment period when the development of enterprises may be delayed because persons necessary thereto are still in the armed forces. It is particularly important in certain fields that those individuals in the armed forces who are in a position to organize and initiate enterprises leading to employment be given an early release.

4. *Continuation of training*—those who are in service and who have entered upon courses of basic, advanced, or technical training should be given an opportunity

to complete such courses before being mustered out of the service.

The President's Advisory Committee also made certain recommendations in elaboration of their concept of the scope of demobilization. The following expressions of national policy, when implemented by the Army, gave rise to many annoying problems within the Army.

Educational services:

The following types of educational services should be provided:

1. For service men desiring to resume industrial or other employment, a program of vocational and job training to prepare them to reenter their old jobs or occupations or to find appropriate employment in new ones.

2. A program which will permit young ex-service men, whose education because of service has been interrupted, to resume their education and which will afford equal opportunity for the education of other ex-service men of ability following demobilization.

3. The provision of training and educational opportunities for men in overseas areas and particularly for those who may for any reason be waiting for repatriation or demobilization.

The programs of the United States Armed Forces Institute and other voluntary educational services of the armed forces should be continued and expanded as a necessary adjunct to the process of demobilization. It is recognized that these existing educational services will then be directed more towards preparing men for the resumption of civilian occupations than they are at present, and that this will necessarily involve a redirection of their efforts and reorganization of their processes.

Announcement of plans:

The announcement of reasonable and adequate plans for readjustment would in itself serve as a steadying influence during the period following cessation of hostilities. If the men in the armed forces know what provisions are being made for their protection and welfare and security in employment, and if they understand the difficulties involved in the withdrawal of forces from far-flung battle fronts, in transportation, in repatriation, and in demobilization, they are the more likely to view with patience any unavoidable delay in the process of their release from the service.

Implementation of another group of recommendations, while not an Army responsibility, was so closely connected in the eyes of the soldier and the public with the Army that any malfunctioning of the program cast opprobrium upon the War Department. These recommendations, generally speaking, were that:

1. Federal legislation should be enacted creating special veterans' unemployment compensation benefits of such character as to place those who have served in the armed forces on a parity with those who have earned wages in private industry and commerce with respect to unemployment compensation.

2. When men receive their discharge, they should become eligible for veterans' unemployment benefits provided that they register for employment with the appropriate office of the United States Employment Service and otherwise comply with the rules and regulations promulgated federally. No waiting period should be required.

3. Unemployment benefits should be paid to eligible ex-service men at a uniform rate at any time that they are unemployed within the next 12 months, provided, however, that the total of such payments should not exceed the equivalent of full benefit payments for at least 26 weeks.

4. These payments should be provided and administered by the federal government, which may utilize the state unemployment compensation systems, if the operation remains a function of the states.

Part II
The Underlying Problems of Execution

As stated earlier in this paper, the expressions of national policy formulated by the President's committee were difficult for the military to implement without censure. Faced with these requirements, the War Department planners were forced to eliminate or modify many demobilization procedures and plans that would have been preferable from a purely military viewpoint. For example, the directed basis of selection for discharge eliminated the possibility of unit demobilization, for our replacement system, used throughout the war, had caused the organizations to be heterogeneous as to length and character of service. In deference to executive direction, the demobilization planners finally evolved the following principles as guides for their planning and operations:

1. Recognition of military necessity, with emphasis on the continuation of the war against Japan as a primary consideration.

2. Latitude to the commanding generals of theaters and other major commands.

3. Demobilization by individual selection-out rather than by units.

4. Simplicity and elimination of irritants to the troops.

5. Maximum utilization of existing policies.

6. Demobilization at the most rapid rate consistent with military necessity and availability of shipping.

7. Continuation of mobilization to meet attrition losses simultaneously with demobilization.

8. Full explanation to the troops and to the public of demobilization plans and reasons therefor.

9. Full knowledge by troops of their demobilization standing, as reflected by an adjusted service rating card, and the implications of the credits reflected on the card.

A draft version of the War Department plan for readjustment of personnel after defeat of Germany, based on these principles, was approved by the Chief of Staff and issued for distribution on 30 August 1945.

In addition to the use of the normal personnel administrative procedures, there were two techniques evolved peculiar to the system of selective demobilization. These techniques were the determination and use of:

1. *Demobilization criteria*—a series of announced characteristics that determined the relative eligibility of each individual for release from active duty. Determination of the exact criteria to be used to establish relative eligibility for discharge, and determination of their relative weights, were decisions of major policy to be determined on the highest Army level. It was necessary to base these decisions upon a careful survey of opinion. World War II criteria and their relative weights were:

a. Service credit (months in Army from selected date).—One point per month.

b. Overseas credit (months served overseas).—One point per month.

c. Combat credit (number of decorations and Bronze Service Stars).—Five points per award.

d. Parenthood credit (number of children under 18 years of age).—Twelve points per child up to a maximum of 36 points.

During the entire demobilization program, special interests continually attempted to secure special consideration and adoption of various criteria of personal benefit to the group. Inevitable as such tactics may be, they are nevertheless annoying and harmful to the Army.

2. *The standard of eligibility for release*—in systems reducible to mathematical determination of eligibility, this is called the critical score. The critical score is that adjusted service rating score which establishes eligibility for separation, military necessity permitting. The

critical score is determined by Headquarters, Department of the Army, by measuring the current eligibility status of the entire Army, as determined from consolidated reports of adjusted service rating scores, against the needs of the projected troop basis or redeployment forecast.

The proper use of the critical score is highly important in the execution of the demobilization program. There are two general methods of applying the critical score:

1. *As an announced objective.*—In this method, the ultimate critical score which will accomplish the over-all reduction in strength desired, modified by an appropriate safety factor, is openly announced, accompanied by a "target" date for the realization of complete demobilization or redeployment. At the same time, or as soon as possible thereafter, *tentative schedules* of progressive reduction to the target date, based upon physical capabilities, may be announced. The distinguishing feature of this method is that the individuals who are ultimately to be separated know that fact *at the initial announcement* of the critical score. Similarly, those who are to be retained for further service know that fact immediately. When this method is employed, the inevitable non-military criticism of the demobilization program takes the form of censure of the *rate* and of the *methods* and *procedures* of the demobilization process. Condemnation of inevitable minor inequalities and unavoidable administrative delays mounts progressively out of all proportion to the facts. Pressure becomes incessant for the acceleration of the rate and can vitiate the best laid plans for orderly demobilization if not resisted.

2. *As a secret objective.*—In this method, the ultimate critical score that will accomplish the final reduction is computed but retained on the highest level in strictest secrecy. *Interim* critical scores are computed, based primarily on the physical and administrative capabilities of the demobilization system to accomplish redeployment and discharge. These interim critical scores are then announced progressively at relatively brief intervals. A variation of this method envisions the use of different interim scores for different commands and theaters. The distinguishing feature of this method, however, is that the individual does not know that he will be separated until a relatively brief time before discharge is accomplished. Non-military criticism of the demobilization program under this method takes the form of condemnation of top level planning and gives rise to the charge of wasting manpower by retention of an excessive over-all strength. The *scope* of the program comes under fire. This is particularly true when hostilities have ceased completely. When readjustment is primarily a matter of redeployment accompanied by partial demobilization, the administrative difficulties of the secret objective method multiply rapidly. This arises from the fact that the use of interim critical scores complicate the segregation of personnel into units being demobilized and units for future operations. It becomes necessary in making these transfers to use additional scores as screening scores in anticipation of drops in the current interim critical scores. These screening scores tend to vitiate progressively the initial effects of secrecy as to the ultimate critical score, by indicating in advance the range of the program.

With slight variations in timing, we employed both of these basic procedures, using the announced objective method first during the readjustment phase, and then, shortly after the surrender of Japan, the secret objective method. Accompanying each method were the typical criticism and pressures until the Chief of Staff was forced to warn the country that the Army was in danger of becoming unable to perform its given missions due to accelerated

demobilization beyond the phased plans.

As pointed out in the discussion of the extra-military factors of demobilization planning, the morale problem is a three-pronged dilemma: those leaving the Army, those staying in the Army, and the general public—all with conflicting interests—must be satisfied. During redeployment, the group remaining in the Army must be given primary consideration. Upon demobilization to peacetime strength, when there is no immediate threat of imminent removal of conflict, probably the general public and the group being discharged should be considered first at the expense of the military forces. This is true particularly when the Army feels that in the interests of *future* security it is more important that the public support adequate peacetime defense measures than that current military efficiency be maintained. There are, of course, limits to this deference that must be carefully calculated and controlled in respect to the long-range strategic concept. Unfortunately, during demobilization, such explanations of procedures apparently contrary to strictly military patterns cannot be made without danger to the national security. Accordingly, junior and frequently senior commanders are aghast at what appear to be violations of fundamental military doctrine.

The recommendations of the President's board concerning educational facilities caused the War Department to incorporate the Army Recreational and Educational Plan into the Demobilization Regulations, ostensibly as a morale maintenance instrument. Many commanders considered this program a waste and a hindrance. The conflicting views on this matter amount primarily to opinion as to where the emphasis should be placed in the use of the normal tools of morale maintenance as applied to personnel *awaiting separation.*

1. *Emphasis upon military training.*—It is felt by many authorities that the primary emphasis of the training program for personnel awaiting demobilization should continue to be placed upon routine military subjects, duties, and maintenance of discipline up to the time of discharge. Proponents of this method feel that leadership and industry are the primary factors in morale maintenance and that effective leadership can be maintained best in the accustomed military pursuits. They point out further that useful and necessary military work can be accomplished under this system.

2. *Civilian training.*—Opposing the foregoing are those who feel that personnel awaiting demobilization will resent and resist the continuance of military training for which they see no further use, but will welcome and appreciate training slanted toward preparing them for their impending return to civilian life. Opponents of the plan point out that the program cannot be applied in the same degree to that personnel which is being detained for further service, and that this fact militates against the maintenance of morale in the latter group. Sponsors claim, however, that the ultimate welfare of the nation dictates the use of the available time to advance the individual in civilian pursuits, particularly inasmuch as he has, by virtue of having become eligible for discharge, undoubtedly absorbed the maximum of military education appropriate to himself. The implementation of this plan requires the initiation of large-scale educational programs and the expansion of recreational and athletic schedules and facilities.

Implied in the defense of this position is the belief that discharged veterans subjected to this system will be sympathetic to future defense needs and grateful to a thoughtful Army. Considerations that are not always obvious to the field commander may be the basis of decisions on high level policy that call for pro-

cedures contrary to preferred military practice.

On the other hand, the validity of the assumption that discharged veterans and the general public will be sympathetic and grateful to the Army because of relaxed discipline and redirection of effort during demobilization is certainly open to question. Apparently this redirection could not be accomplished without a measure of attendant waste, disorganization, and inefficiency, all occurring at the very time the soldier was approaching discharge. Final impressions are frequently lasting ones.

It is possible that under a system of military training to the end of his service the veteran will remember the Army with more regard if he considers it as a stern but fair and efficient taskmaster whom he has successfully served in difficult circumstances. He might well feel that what he has endured should be endured by future generations.

In any event, policies on such matters are for determination on the highest levels and are usually forced on the Army by circumstances or extra-military considerations. This paper has served its purpose if it has brought a few of the considerations upon which these policies are based to the attention of commanders who must put them into effect.

July 1949

Many of the Army's difficulties today can be traced to the hasty and hysterical demobilization of the American forces at the end of the war. Instead of dismantling the machine that had made us the most powerful force for peace in the world, the American people chose to wreck it. Even before Hiroshima was cleared, the clamor for instant discharge had disorganized our armies in the field. We chose to view the end of the war as the magic beginning of peace. We put our precious standards of private indulgence before an objective that had already cost us 350,000 lives.

In theaters throughout the world, hundreds of millions of dollars worth of equipment was abandoned to rot, to ruin, and to rust. An Army that had smashed the best legions of Hitler was routed by the lure of a quick trip home.

Out of this precarious disorder, the United States Army has salvaged the body of its regular force. Freed from the problems of wartime expansion, this new Army must not only train its men as competent soldiers but it must merit and win the approval of those troops as an institution which they can value, respect, and prize. It is this type of an Army we hope to make.

General Omar N. Bradley

Corps Defense on a Broad Front

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DEFENSE has been conducted on very wide fronts in the past, and will most certainly be similarly conducted in the future. Yet the tactics and technique of defending on a broad front are neither clearly indicated in official texts nor seriously considered by most commanders until forced to do so by the situation.

The corps will be used for the purposes of this discussion, because it is of sufficient size to allow a broad discourse on the employment of all arms and of the principles involved without becoming entangled in academic arguments as to the exact dispositions and techniques of each arm. The term "broad front" will mean a frontage of 50,000 yards (28.5 miles, approximately) or greater for a typical corps of three infantry divisions and one armored division, as opposed to the 25,000 to 30,000 yard frontages (14.2 to 17 miles, approximately) considered normal for a strong position defense.

Numerous conditions and situations force this method of defense. Among them are: limitations on troops available, brought about by higher headquarters effecting economy of force; a temporary halt during a fluid situation involving rapid movements over a wide area; the lack of terrain features on which to secure flanks on normal frontages; or the all-around protection required in the defense of an island or an airhead. One other condition in future warfare may well force defense on broad fronts in the interests of protective dispersion—the threat of mass-destruction weapons. Many theorists are prone to discount the use of these weapons on the battlefield because of the proximity of friendly and enemy forces. Nevertheless, it remains a possibility and should not be eliminated from our considerations when making an estimate.

This discussion is based upon the premise that defending on a broad front is a type of combat to be employed not only when forced, but also deliberately, when favorable conditions make it worth the risk involved. Two of the most important principles of war to a strategic planner are the principles of mass and the economy of force. These two ideas must always be considered together and they simply mean that, when striking a blow, every possible amount of force must go into that blow in order to insure its success. Consequently, every possible amount of force that sensibly can be taken from other parts of the battle must be taken and added to that blow. The ability to defend broad fronts with minimum forces contributes to the success of the decisive effort by making more power available to it. This ability should be developed and used to the maximum.

In making the decision deliberately to defend on a broad front, certain conditions should be considered as favorable to the choice and their absence as unfavorable. These favorable conditions are: air superiority on the side of the defender,

which gives him freedom of movement and restricts movement by the attacker; lack of armor and mobility on the part of the attacker, which reduces the speed of his attacks and allows the defender to mass his reserves against them; and the expectation of reinforcement, which allows the defender to risk defending on a broader front because he knows that, if the enemy does penetrate his area, help is not far away. There is another consideration which favors the decision, although not the defense itself. If a withdrawal (for the purpose of shortening lines) is necessary to avoid defending on a broad front also involves giving up hard-earned terrain which is essential for future operations, then defense on the more forward broad front should be the choice and a withdrawal should be executed only when forced by enemy action.

Official texts give little about the conduct of defense on a broad front, but such defense can be accomplished successfully, if basic principles are observed, and if they are adapted to the situation

Principles Involved

Having accepted a decision to defend on a wide front, consider next the best methods of execution. When a corps defends a front of approximately 50,000 yards, the application of recognized procedures must be adapted to the situation and the military action approaches a screening operation rather than the organized defense of a battle position. This does not infer that the recognized principles of defense can be violated with impunity. On the contrary, they must be more carefully observed than ever as *principles*. This means that a maximum possible depth must be attained from front to rear and that flanks must be kept secure. It also means that reconnaissance and counterreconnaissance must be vigorous and continuous, that a powerful reserve capable of effecting decisive action must be maintained, and that counterattacks must be planned and executed at the critical time. These principles constitute basic truths and cannot properly be modified. Failure to observe them invites defeat.

The *application* of principles, however, should always be modified to fit the situation at hand and, therefore, we should expect certain variations to become evident in a proper application of the principles of defense when considering wide frontages.

Security Forces

Upon examining the organization of this type of defense from front to rear, covering and security forces appear first for study. These forces will assume even greater importance than in a normal defense, because early warning of the enemy's strength, dispositions, and actions must be assured. Delay and deception carried out by security forces in order to provide time for the corps commander to counter any action along his extended front may prove vital. Security forces must, therefore, be even more mobile and numerous than those employed for a position defense.

Main Battle Area

The main line of resistance is normally the next element behind the security forces, but when conducting a defense on a broad front there should be no main line of resistance as defined for a position defense. There should, however, be a *main battle position*, which might be more appropriately called a *main battle area* (see Figure 1). The continuity of this battle area depends upon the ability of the corps to hold key terrain features with strong, balanced, self-sustaining units.

This envisions the holding of widely separated centers of resistance as key locations to be strongly defended, even though by-passed and encircled, while the remainder of the battle position is held lightly or covered by patrols or observation and fire. The intended effect of these dispositions is to canalize the attacker's efforts into routes of approach less desirable from his viewpoint. It is also intended to direct his spearheads onto ground of the defender's choosing and which is most favorable to the success of the defender's planned counterattacks. The strong all-around defense of the forward key positions will, in addition to canalizing enemy attacks, be a major factor in limiting the depth of penetrations. There is a definite relation between the depth and the width of a breakthrough. If the shoulders on either side of a penetration hold, then the attacker is soon forced to stop his forward movement and concentrate on the reduction of these redoubts in order to widen the gap and provide room to pour through troops and supplies in support of his spearhead. The intervals between the defended key positions must be covered by the massed fires of division and corps artillery in order to prevent penetration, if possible, and to support counterattacks when these are launched.

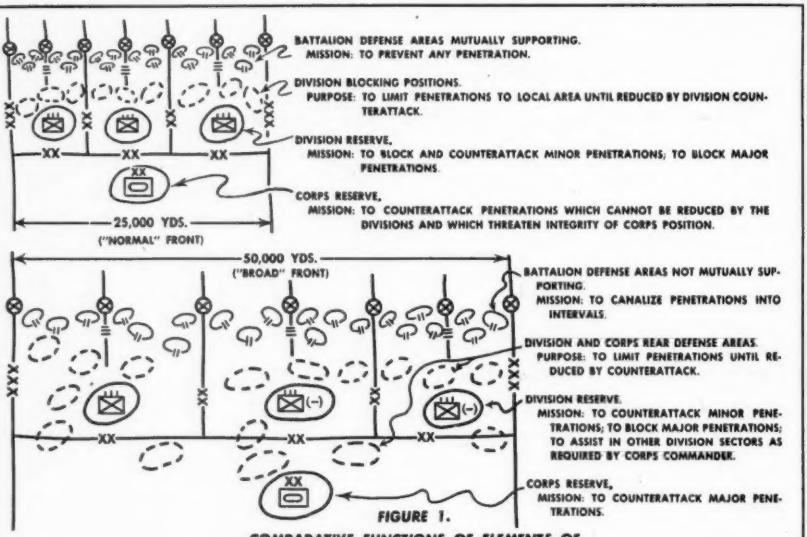
BATTALION DEFENSE AREAS MUTUALLY SUPPORTING.
MISSION: TO PREVENT ANY PENETRATION.
DIVISION BLOCKING POSITIONS.
PURPOSE: TO LIMIT PENETRATIONS TO LOCAL AREA UNTIL REDUCED BY DIVISION COUNTERATTACK.
DIVISION RESERVE.
MISSION: TO BLOCK AND COUNTERATTACK MINOR PENETRATIONS; TO BLOCK MAJOR PENETRATIONS.
CORPS RESERVE.
MISSION: TO COUNTERATTACK PENETRATIONS WHICH CANNOT BE REDUCED BY THE DIVISIONS AND WHICH THREATEN INTEGRITY OF CORPS POSITION.
25,000 YDS.
("NORMAL" FRONT)
50,000 YDS.
("BROAD" FRONT)
BATTALION DEFENSE AREAS NOT MUTUALLY SUPPORTING.
MISSION: TO CANALIZE PENETRATIONS INTO INTERVALS.
DIVISION AND CORPS REAR DEFENSE AREAS.
PURPOSE: TO LIMIT PENETRATIONS UNTIL REDUCED BY COUNTERATTACK.
DIVISION RESERVE.
MISSION: TO COUNTERATTACK MINOR PENETRATIONS; TO BLOCK MAJOR PENETRATIONS; TO ASSIST IN OTHER DIVISION SECTORS AS REQUIRED BY CORPS COMMANDER.
CORPS RESERVE.
MISSION: TO COUNTERATTACK MAJOR PENETRATIONS.

FIGURE 1.

COMPARATIVE FUNCTIONS OF ELEMENTS OF DEFENSE ORGANIZATION.

Defensive depth is gained partly by the use of pre-determined rear positions. These rear positions should be selected and reconnoitered by the divisions and the corps, and, if time and manpower permit, they should be organized and prepared. They have a purpose similar to the "blocking positions" employed in a normal division defense. Such positions should be selected in the same manner as the key locations in the forward area, thereby serving to further canalize and block enemy penetrations in such manner that

the decisive blow struck by the maneuvering element of a counterattacking force will have every possible chance of success. Along with this picture of a main battle area made up of islands of defense, boundaries and limiting points must not be overlooked, because the lateral control of divisions and the delineation of responsibility will continue to be necessary.

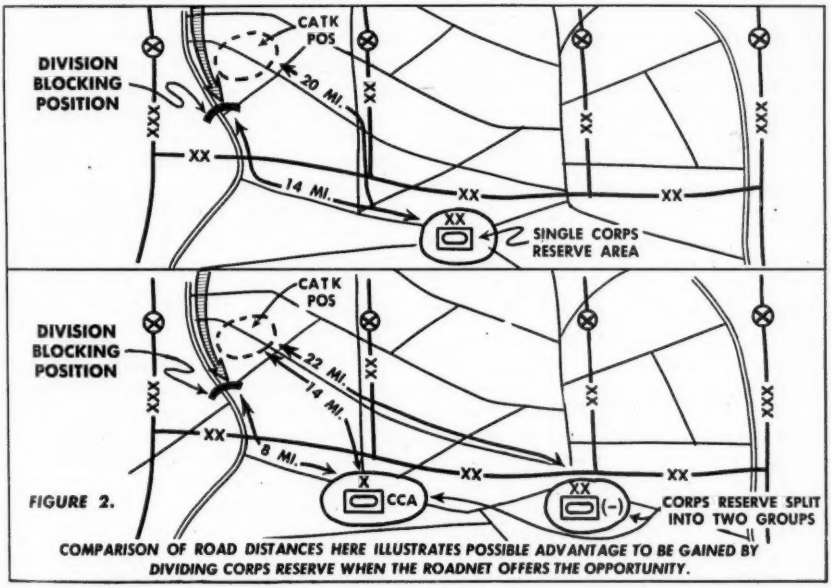

FIGURE 2.

COMPARISON OF ROAD DISTANCES HERE ILLUSTRATES POSSIBLE ADVANTAGE TO BE GAINED BY DIVIDING CORPS RESERVE WHEN THE ROADNET OFFERS THE OPPORTUNITY.

Reserves

While making dispositions of forces, the size and location of division and corps reserves must be carefully determined as part of the over-all evaluation of the defensive sector. The corps commander must first analyze the frontage assigned and the number of critical or key terrain features that must be held. As a general guide, these key points should be defended by a unit of reinforced battalion size. From this analysis, the corps commander can determine the area that each division can logically be expected to hold while retaining a reasonable reserve. The corps commander should require that maximum possible reserves be held out and, if necessary, he must provide the means to make them mobile. If, however, he is forced to make a choice between having strong division reserves and having a strong corps reserve, the latter decision is usually preferable. A strong, centrally-controlled reserve has greater merit than many weak local reserves, since the final decision in maintaining the integrity of a defense is dependent upon the ability of the defender to decisively defeat the attacker's main effort. A strong central reserve will have a much better chance to accomplish this than will a number of weak reserves spread along the line.

The location of division reserves will assume greater importance to the corps

commander when defending on a broad front. These reserves will, of necessity, frequently be counted upon to participate in corps counterattacks, usually as a blocking force to retard the movement of an enemy penetration until the corps reserve division can launch its attack. Division commanders should have this in mind when selecting reserve areas, and the corps commander should indicate his tentative plans for counterattack in order to assist division commanders in their choice. For the same reasons, the corps commander is more likely to place "strings" on division reserves, since he may need them to reinforce a blocking action or an attack in another division's sector when the corps position is threatened.

The corps reserve should be located at the foremost point that will allow it to move quickly to any part of the wide front. Selection of the position should be based on the degree of mobility permitted by the particular terrain and road net. In comparison to a normal defense, the position will often be much farther to the rear in order to obtain unhampered maneuver space and to gain accessibility to the widely separated flanks. In order to more rapidly launch counterattacks, and in order to meet surprise attacks more quickly, particularly from the flanks, the corps reserve may be split into two forces (see Figure 2). The distance between the two elements of the reserve, however, must be short enough to allow rapid concentration when desired. Counterattacks have been mentioned and alluded to repeatedly in the discussion on reserves, because the size and positioning of reserves must be based entirely upon counterattack plans.

Counterattack Plans

The corps prepares many counterattack plans when defending a broad front, and each plan in itself must have maximum flexibility. This is true because the great width of front, which is being lightly held, makes penetration possible at almost any point. Nevertheless, while small enemy units can attack and effect minor penetrations anywhere along the line of contact, the axis of any major hostile attack is controlled by the terrain and road net. The corps commander is primarily concerned with these possible major penetrations of his defensive sector effected by commitment of the hostile general reserve. If the defense is to be successful, the divisions, within their respective sectors, must withstand the initial attack to the extent that the enemy commander is forced to commit general reserves in an attempt to attain a decision. In conducting the defense, the corps commander must avoid piecemeal commitment of his reserves, seeking always to employ them in mass and in a decisive role. On occasion, but rarely indeed, he may be justified in utilizing reserves to reinforce or strengthen front line units.

The corps must carefully coordinate division counterattack plans along boundaries between divisions since the reserves of any division which is not under attack may be employed by the corps in the division sector being attacked. All counterattack plans should envision maximum usage of motor transport, and provisions should be made for launching the counterattacks at night. The enemy will always attempt to establish at least a local superiority of artillery and air support at the immediate point and time of attack, hence the necessity for night counterattack plans.

Tactical Use of Corps Troops

Variations in the application of the principles of defense should be considered not only with respect to the corps as a whole, but also with respect to the units of which it is composed. In general, during the conduct of the defense, all forward units should be required to give greater attention to aggressive patrolling and raids, general security measures, and all-

around defense. They should be prepared for the rapid movement of troops and supplies on corps order.

The infantry division need not be covered separately since the general discussion above includes the major considerations applicable to that unit. The armored division, due to its inherent mobility and potential shock power, should be used generally the same as in a normal defense. That is, it should not be used to occupy a part of the main battle position because it is evident that its employment in the counterattack role will be more valuable than the static occupation of terrain features

The corps cavalry regiment will be of utmost importance to the commander when defending on a wide front, because there will nearly always be appropriate primary missions (reconnaissance and security) in abundance. Use of the cavalry regiment as a reserve seldom will be justified, and it should be used in counterattacks only in the event that the lack of other troops makes such action essential to maintaining the integrity of the position. This unit may sometimes be required to occupy a flank sector of the main battle area in the interest of shortening the width of front defended by the divisions.

The corps artillery must give close attention to plans for the massing of fires in the intervals between key terrain features. This requires particular attention to coordination of fire plans of the divisions and to the attainment of an integrated corps fire plan which will permit rapid shifting and concentration of fires. The bulk of the corps artillery should be given general-support missions and should select various firing positions from which fire can be massed at widely separated points in a minimum of time. Artillery should remain under centralized control to the maximum extent possible in order to retain its inherent flexibility, just as in any other situation. When the commander desires to augment the fires of a particular division's artillery, he may find it more convenient to attach one or more corps units because of the difficulty of centralized fire control over the great distances involved in defense of a broad front. Attachment, however, should still be looked upon as an exception to normal operation.

The artillery of the reserve division should be employed whenever possible. The firing positions, however, must be selected to fulfill certain requirements. They, of course, must be far enough forward to allow the guns to reach worthwhile target areas, but at the same time far enough to the rear to insure that a sudden thrust by the enemy will not overrun them. Above all, the units must be readily available to the reserve division to support any counterattack. If these requirements cannot be met, then the artillery of the reserve division should be held in reserve with its own division in order to be ready to support that unit immediately upon commitment.

The principal factor to be considered in the use of corps antiaircraft artillery units is that in most cases the entire zone cannot be protected by gun defense. Antiaircraft artillery will, therefore, be used in accordance with a strict priority established by the corps commander.

The corps heavy armored regiment should ordinarily be held in corps reserve rather than attached to divisions. Division counterattack plans, however, should include provisions for the use of all or a part of the regiment. The antitank role of the heavy armored regiment will assume added importance during the defense on a wide front.

A large proportion of corps engineers will be required in preparing the main battle position and in laying out defensive areas in the rear of the main battle position. One principal mission of the corps engineers will be to reduce the corps critical frontage by the use of demoli-

tions and obstacles. Road maintenance will be initially given a second priority if the roads are at all usable. The width of the corps zone and the necessity for close coordination between division and corps engineers during initial stages of the defense will more frequently justify attachment of corps engineers. As in the case of the corps artillery, however, centralized control should be exercised to the maximum and such attachments should still be the exception.

Corps and division installations must be consolidated and established within defended localities. This is necessary to prevent dissipation of men in defense of such installations. This requirement may further necessitate the acceptance of smaller position areas for all supporting units, particularly corps artillery. The possibility of swift penetration by the enemy will be great, and rear installations must be well prepared to defend themselves.

Defense on a broad front can be accomplished successfully, provided that the basic principles of defense are observed and that their application is adapted to the situation. Deliberate and judicious use of defense on a broad front under conditions of the commander's own choice will reduce the chances of its being forced upon him under unfavorable circumstances.

The defense is conducted along *mobile* lines. Mobility is obtained by the use of covering forces, by improving facilities for movement within the battle position, by distribution of forces in depth, and by holding our reserves capable of rapid movement. Covering forces delay, deceive, and disorganize the enemy; units in organized areas of the battle position hold their positions at all costs; reserves maneuver behind the pivots thus established. Mobile and rigid defense are so combined that possession is retained of the areas essential to the maneuver of the defensive forces, the maximum forces are made available for counterattack or counteroffensive purposes, and the enemy is deceived as to the character of the resistance with which he is confronted.

FM 100-5, Field Service Regulations, Operations.

J 14

What Happened?

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Introduction

THERE'S an old saying, "If you live long enough, your sins are bound to catch up with you." The aptness of this saying is demonstrated almost every day at our Army schools.

Picture yourself in the following scene. You have been assigned the task of presenting a problem entitled "An Infantry Division in the Attack of a Fortified Position," to be based upon an historical example. You foresee no trouble because you recall that your outfit participated in that particular type of operation back in 1944. You stride confidently into the school archives and ask for the After Action Reports of the "Blue Flash" Division. However, much to your dismay and disgust, they are too brief, lack clarity, and fail to stress the highlights of that particular type of operation. There are large gaps in the narrative. Somehow, the narrative does not present the action as you recall it. In curiosity, you thumb back to the last page. Who wrote this thing? Lo and behold, there is your name!

You attempt to reconstruct the actual operation from such terse statements as these: "The 2d Bn 932d Inf launched its attack on Hill 339 beginning at 110900 Jan. After four hours of intense fighting, the Bn reported that it was securely established on Hill 339."

Did the attack go according to schedule? Wherein did it deviate from the plan? What particular actions were taken by the commander at the start? Did he take corrective measures at any point? What were his reasons throughout? Were the means to carry out the orders sufficient? Was the objective gained on time?

You could scan the report concerning Hill 339 forever and not find the answers to those questions. The lack of answers to these important questions and many others leaves you with one conclusion: your After Action Report is a failure!

The After Action Report

The After Action Report is not a new idea. We have had Army Regulations directing the submission of journals, diaries, and sketches since even before the Civil War. Unfortunately, most of them were broad directives which could be interpreted as the individual saw fit. An example is the 1857 AR concerning battles, which stated: "Written reports for the General commanding-in-chief are made by commandants of regiments, batteries, and separate squadrons and by all commanders of a higher grade, each in what

Early World War II records failed to give a complete picture of what was taking place, so an Army historical program was developed which aims to show "what happened, when, why, how, and with what result"

concerns his own command, and to his immediate commander."

The regulation in force at the outbreak of World War II was AR 345-105 (1929), paragraph 10 of which gave very general requirements for the preparation of reports after engagements with the enemy. In fact, these requirements were substantially the same as those in effect in 1902. The regulation as a whole was more concerned with regimental battle honors and with the preparation of an annual unit history according to a rather rigid outline. The regulation was the cause of much confusion. Units did not understand the requirement for both unit histories and After Action Reports. In some cases, the two were combined or the unit history was eliminated in favor of a series of After Action Reports. Unfortunately, when unit histories were prepared according to the outline, only bare facts were recorded or the section headings were followed by "no change." Reports such as these are of little or no value.

Inadequate Reports

The extent of the confusion caused by AR 345-105 is shown by the numerous directives and explanations published during the war by administrative and historical officers. In general, each theater enforced and interpreted the regulation to suit its own historical program. In the Pacific theaters, reports were submitted at the close of each campaign or phase; for example, Buna Campaign 1 Dec 42—25 Jan 43; Leyte Assault 20 Oct 44—25 Dec 44. Reports from the period of the North African landing through the Sicilian Campaign were submitted by phase or by separate battle; for example, 1st Armored Division, Sbeitla Operation 3-18 Feb 43. On the other hand, after the Salerno landing, reports were submitted monthly for the duration of the Italian Campaign. The European Theater, likewise, required monthly reports.

The After Action Reports range from handwritten, mud-stained journals, now barely legible, to elaborately bound volumes complete with paintings and sketches. However, the eye-catching appeal of the report is not usually an indication of its accuracy or completeness. Although various supporting documents were to be annexed, in many cases these were wholly inadequate. Little attempt was made by many units to include information on oral orders and command decisions. The lack of telephone journals and conference notes, particularly of higher echelons, has greatly hampered our historians. Vital overlays, orders, and documents are missing or completely buried in a journal file with no reference to them in the text of the report. The many inaccuracies are generally due to faulty proofreading and to insufficient information at the time of writing, e.g., towns erroneously reported captured. According to the historians, alarming statistics could be compiled on the frequent use of the word "assault" and on the use of "it's" as a possessive.

The Historical Division, SSUSA, states that the excellent reports from the following units are worthy of mention: 3d Infantry Division (War Room journals); 7th Infantry Division (detailed campaign reports); VI Corps (cross references from narrative to documents in the journal); 36th Infantry Division (detailed narratives of company action).

Corrective Action by the Theaters

From time to time, the various theaters attempted to call to the attention of all concerned the importance of the After Action Report and the errors which were constantly appearing. Among the more noteworthy was a memorandum dated 14 March 1945 from the Historical Section, ETO, which summarized some of the common faults of the After Action Report as follows:

"(a) There is a prevalent absence of

considerations and oral orders of commanders. What the commanders think are the most utilitarian parts of the history of this or any other war.

"(b) Artillery reports fail to give a complete picture of the artillery's part of the operation.

"(c) There is no integrated narrative of the units as a unit. There are merely separate staff and other reports slung together.

"(d) At times there are indications of floweriness, fine writing, and an attempt to gloss the unit's action with words. Nobody is fooled. Give the straight facts bluntly, briefly, and unmistakably.

"(e) The most prevalent omission is the failure to state why a certain action was taken."

Unfortunately, the above were only a few of many errors which were not confined to the European Theater alone. Even more unfortunate was the fact that these errors were occurring so late in the game—March 1945.

However, in spite of the vagueness of Army Regulations and the individual interpretation by the theaters, the After Action Reports of the tactical units in World War II are, as a whole, surprisingly complete. But the service units and administrative headquarters, unless prodded by special directives, were inclined to give only the bare essentials of historical information.

Corrective Action in the Zone of Interior

Prior to World War II, the US Army had never published a history of its activities during any war. After World War I, an attempt to do this was made, but the project failed primarily because of lack of funds. Early in 1942, the President issued an Executive Order which required all executive departments to keep records and prepare a history of their administration of the war effort. The Army interpreted this to mean a history of its administrative activities, and, thereupon, established an historical program in the three major commands: the AGF, ASF, and AAF. However, this program was confined to the Zone of the Interior.

It was not until early 1943, after the North African landings, that the lack of historical coverage became apparent. Various studies were made of means to correct this deficiency. Finally, in the summer of 1943, the Historical Branch of G-2, WDGS, was established. The first mission of this branch was to extend the historical program to the overseas theaters in order to insure that adequate historical coverage of combat activities would be available in the future. Therefore, combat historians were dispatched to certain theaters to undertake the supervision of field reports and to take such notes and to do such writing as appeared feasible.

In the fall of 1943, when After Action Reports began to flood the Pentagon, the Operations Division (OPD), WDGS, set up a program for the dissemination of combat information, particularly tactical and technical lessons learned. All unit combat reports and historical records were screened by the Combat Analysis Section of OPD. Here representatives from AGF, ASF, AAF, the General Staff, British agencies, Navy, and others studied the incoming records. The important information gathered was disseminated to the theaters and lower echelons in the Zone of Interior.

It was during this period that the inadequacy of the After Action Report became apparent. Too often significant tactical, technical, and staff data being developed by the overseas forces were not included.

Finally, in order to increase the flow of information on the front line activities of ground units, T/O&E units of an Information and Historical Service were established by the War Department. These units were allocated on the basis of one

headquarters unit per army, independent corps, or major task force, with one combat information collecting unit for each front line division or separate combat team. These units not only collected and forwarded information of historical interest, but also selected information of particular combat value for dissemination to other theaters through OPD.

In all of this work, however, the historian was constantly faced with the difficulty of doing something which was not directly concerned with winning the war. Nevertheless, it was important to the education of the Army if a future war should take place. Far too frequently, the immediate reaction of commanders was that they could not be bothered with it—they were fighting the war. This attitude was understandable. The fact that so much was accomplished in spite of this attitude is remarkable.

Future Historical Reports

In November 1945, the Historical Branch was removed from G-2 and made a Special Staff Division. At the same time, it reoriented its program with a view toward producing an over-all historical work, the *History of the U.S. Army in World War II* (about 95 volumes).

During the postwar period, the Historical Division has been concerned with cleaning up the wartime programs. Generally, this amounts to arranging for the return of records, supervision of the completion of the monographs and historical studies of all Army agencies, and review and evaluation of the material as a basis for the final history and use by the Army schools.

However, the program of the Historical Division has not been restricted to writing a history of the past or closing out its wartime activities. It has been acutely aware of the deficiencies in our World War II reporting system and is taking the following action to correct the deficiencies:

1. A complete revision of AR 345-105.
2. Preparation of a T/O for an historical service organization.
3. Preparation of a field manual on military history.

The proposed regulation is a departure from the old form in the requirement for the preparation of a War Diary. This War Dairy will be the historical report of combat units and service units temporarily assigned combat missions. To it will be attached supporting documents, and, in the case of division and higher commands, the reports of staff sections. The proposed field manual on military history will stress the fact that the War Diary should provide an intelligible running account of actions taken, the plans and reasoning underlying these actions, the results, and the reasons for their success or failure. It will not be sufficient for the diary to contain a bare record of orders received and issued and of events which relate to these orders. The Diary must not be merely a chronicle. It must explain not only *what* was done, but *how* and *why* it was done.

The second highlight in the plan to correct our reporting deficiencies is the establishment of a historical service organization and historical staff sections organic to army, corps, and division, under the chief or deputy chief of staff. The historical service organization will consist of a number of cellular teams which can be attached to either tactical or nontactical units for the purpose of accomplishing specific historical tasks.

The proposed changes by the Historical Division, Special Staff, US Army, represent a great step in the improvement of our historical program. Through its proposed publications, the importance and aims of the historical program and the means to accomplish these aims should be clear to all who might have occasion to write the action reports of any future war.

Use of After Action Reports

Although the reporting system contributed, in the main, to the deficiencies in our historical program, not all the blame can be laid to this cause. Much of the trouble can be ascribed to the indifferent attitude of the personnel—an attitude which considered the historical program as just so much extra paper work. Perhaps this can be attributed to the fact that few realize the use made of the After Action Report, once it starts its long trek to the rear.

Both during the war and today, After Action Reports serve a dual purpose. The Historical Division utilizes them as source material in writing campaign histories; the Technical Services and the Army schools use them to study the use of various arms and for the study of particular situations. The Historical Division makes constant use of After Action Reports in the preparation of campaign and administrative history, in the determination of the history and battle honors of army units, and in reference services to the public and to Army schools. The journals, periodic reports, and orders are the basic documents for the campaign history.

The Army schools utilize the same material to present problems based upon historical examples and to demonstrate the lessons which have been learned in combat. Unfortunately, the schools are greatly restricted in their study because the voluminous annexes, journals, journal files, and other documents are almost impossible to reproduce satisfactorily. Consequently, in many cases the supporting documents which are an integral part of the After Action Report are not available to the schools.

The following list gives some indication of some of the agencies which utilize the After Action Report.

AGO: Casualty Section—Frequent reference for additional information concerning casualties (exact circumstances; mission of unit at time man was killed; names of officers, platoon leaders, etc.).

Decorations Board: Determination of validity of unit claims for citations.

Judge Advocate General: Additional information on war crimes cases.

Army Personnel Records Board: Extensive use of action reports in connection with combat experience of Army officers to determine promotions.

Engineers: Terrain studies, special engineer field reports, etc., for training purposes.

Ordnance: Reports of ammunition expenditure and other ordnance statistics for particular actions (e.g., Cassino).

Chemical: Comments on the use of the 4.2 mortar, the flamethrower, and smoke.

Quartermaster Corps: Extensive use of action reports in connection with the identification of unknown persons killed in action.

Marine Corps schools: Study of army campaigns, especially amphibious operations and small unit actions.

In addition, records are used extensively in the preparation of unofficial unit histories, magazine articles, books, and the memoirs of Army officers.

Summary

The value of an accurate and complete history of any war is not readily apparent until long after the firing has ceased. It is only then that the importance of detailed day-to-day records is realized, for they form the basis for the historical publications.

To insure an adequate military history in the future and to profit by our World War II deficiencies, the Historical Division is, today, laying the groundwork for

an improved historical program. The importance of daily records and the objectives of the program are cited by the following extract from the proposed field manual on military history.

"The historical program of the Army is designed (1) to assemble material for and to prepare a comprehensive and accurate history of the Army; (2) to gather material on new developments in tactics, organization, equipment, and technique, on the basis of which prompt dissemination of such information to interested agencies of the Army can be made; and (3) to provide material for records of the achievements of component units of the Army. Accomplishment of these objectives depends fundamentally on the availability of detailed and accurate information regarding the activities of military units and organizations of all sizes. To be of maximum value, this information must be gathered at the time the events occur, from those who are engaged in the activities concerned, and it must be supported by documents which will make it clear what happened, when, why, how, and with what result."

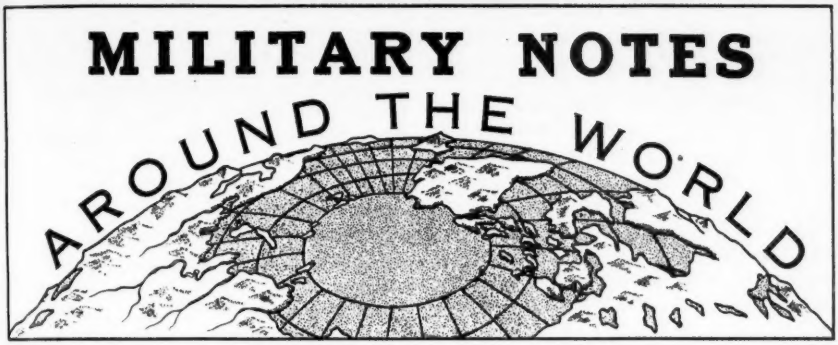
On the actual day of battle, naked truths may be picked up for the asking; by the following morning, they have begun to get into their uniforms.

General Sir Ian Hamilton

In most instances, history recounts merely the events of a war, never the details. Battles and the glorious deeds performed are the points which everyone likes to read—but the difficulties of supply, the fatigues of the marches, the privations suffered in bivouacs, the sufferings in hospitals, and the devastation of the country are shady sides, the perusal of which is laborious, little inviting, but still so very necessary.

Moltke's War Lessons

MILITARY NOTES AROUND THE WORLD



UNITED STATES

Balloon Altitude Record

Establishment of a balloon altitude record of 140,000 feet—20,000 feet higher than the previous maximum—was claimed recently by the Army Signal Corps. The greatest height ever attained by a balloon carrying human beings was 72,395 feet. That was accomplished in 1935 by Captains Albert W. Stevens and Orvil A. Anderson. The balloon that rose 140,000 feet carried only meteorological instruments.

Although the balloon used disappeared in clouds at 40,000 feet and was lost from sight, a similar balloon released 8 July 1948, when the sky was clear, was visible to the naked eye at an altitude of 120,000 feet. The tracking of balloons now is effected by radio, so that visual observation of the balloon is no longer necessary.

The Signal Corps is using high altitude balloons to carry delicate scientific instruments aloft in an investigation of the physical properties of the atmosphere in the relatively unexplored region between 100,000 and 150,000 feet. Better weather forecasting may be only one of the benefits resulting from the experiments. In addition, the data obtained will be used in connection with the launching of rockets. —Department of the Army.

Rocket Cameras

Camera-bearing rockets soaring to 60 and 70 miles above the earth have recorded pictures of more than 800,000 square miles of the western United States, probably the largest land area ever to be photographed at one time.

The pictures show a strip of land extending 1,400 miles from northern Mexico to upper Wyoming. Two new automatic "sequence" cameras were mounted in a Navy Aerobee rocket and one in a German V-2 rocket and carried at a speed of 2,700 miles an hour. The film was exposed as the rockets neared their summits.

The Aerobee reached a peak altitude of about 70 miles, and its two cameras recorded more than 400 individual pictures of an area calculated at 300,000 square miles and 1,400 miles long.

Although achieving less altitude—about 60 miles—the camera in the V-2 covered greater territory with its more than 200 separate pictures by spinning slowly at the peak of the flight.

As a result of this spin, the camera captured a section of horizon estimated at 2,700 miles long, with the distance from the horizon to the camera believed to be about 700 miles. Total land area of the V-2 "mosaic," is about 800,000 square miles.—*The New York Times.*

Light-Weight Boat

The Army Chief of Transportation recently announced the development of a new type river and estuary skiff weighing only 380 lbs. but able to carry four men and 3,000 lbs. of military supplies.

The nonsinkable boat has been developed to meet the latest needs of the Army for light, easily-handled boats for use in small waterways. Required characteristics of the boat include lightness for portaging, nonsinkability, and a simple design for mass production. Aluminum alloy is used throughout in the construction of the Transportation Corps' new skiff.

The boat is propelled either by a 10 horsepower outboard motor or by oars. The seats and floorboards are quickly removable to facilitate maintenance and repair in the field. Carrying handles are incorporated at three stations on either side to permit easy carrying of the boat, when empty. Compared with craft previously used by the Army of similar size, the new boat is said to be considerably lighter.—Department of the Army.

Light-weight, nonsinkable aluminum boat.

Jet Engine Research

Search for a jet engine which will operate efficiently at altitudes above 40,000 feet is under way at the Lockland, Ohio, plant of the General Electric Co.

Chief reason for this new research is the Air Force claim that its B-36 bomber, which can operate above 40,000 feet, is invulnerable to jet fighters when flying at maximum altitude.—*Armed Force.*

Radiological Defense

The US Air Force has opened a 6-week radiological defense course at Keesler Air Force Base, Biloxi, Mississippi, under direction of the Technical Division of Air Training Command. Officers and airmen are being trained to deal with the effects of atomic or radiological attacks.

The first class was composed entirely of USAF personnel, but the second class included students from the Air Force, Army, Navy, Coast Guard, and US Public Health Service.

Normal student enrollment is about 40 per class, and a new class starts every seventh week. Instructors are USAF officers and civilian personnel with extensive backgrounds in physics and chemistry.

The curriculum of the radiological defense course was recommended and approved by the Atomic Energy Commission and is similar to that of Army and Navy schools now training personnel in radiological defense duties. Instruction in the schools varies somewhat because of the different missions and hence different types of equipment used in each service.

Graduates of the course, upon returning to their units, prepare plans to deal with radiological problems which conceivably could confront their organizations. In addition, they instruct other personnel in the use of Geiger counters, pocket desiometers, film badges, and other instruments used to detect the presence of radiation or to measure the degree of individual radiological exposure.

Perhaps the most far reaching effect of the radiological defense course will be to spread knowledge throughout the Air Force of methods and techniques which would combat radioactive particles and the tissue-destroying radiation emitted by these particles.—Department of the Air Force.

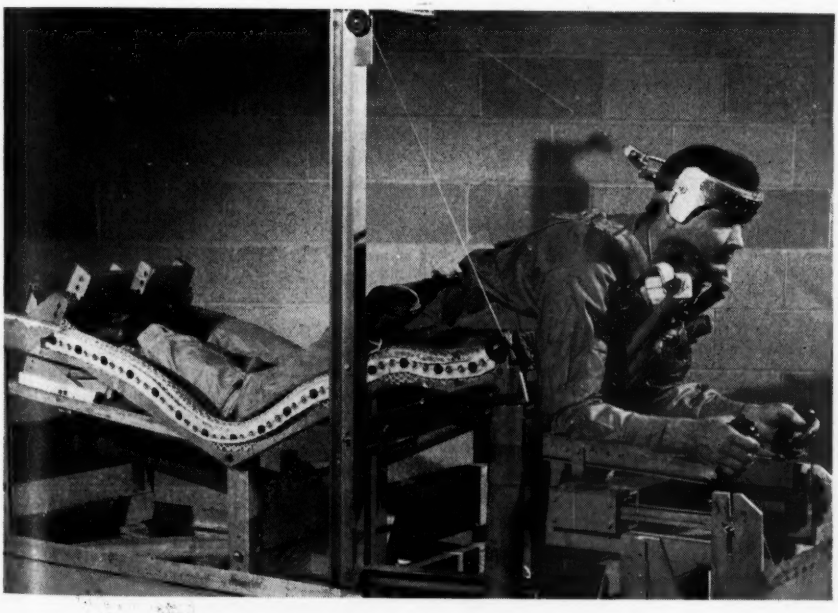
Prone Pilot Bed

Flying fatigue and gravitational pull are dangerous business for a pilot, and the United States Air Force is trying to eliminate these dangers so far as possible. Latest development for easing the strain of "just sitting" and reducing the possibilities of "blackout" is a prone position pilot bed designed by the Aero-Medical Laboratory of Air Matériel Command.

Pilots who took part in recent tests experienced no discomfort from lying on the bed for as long as 8 hours continuously, and noted no unpleasant after-effects. Their reports indicated that in all cases they experienced less fatigue than from sitting in the normal flying position. Some felt they could have remained on the bed indefinitely.

During tests in the centrifuge, pilots in the prone position withstood up to 12 g's (12 times the pull of gravity) for a given time without blackout. The conventionally seated pilot can tolerate only about 4.5 or 5 g's. This change in position provides an added life-saving factor and eliminates much of the accident possibility caused by blackouts.

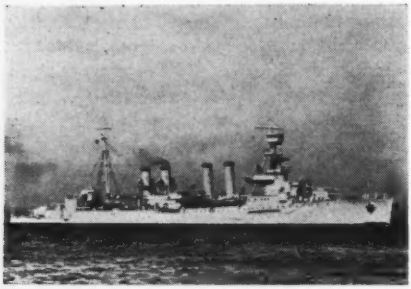
To date, the prone position bed has not been made a standard part of any plane, but it has been installed in the nose of a B-17 for test purposes. It will also be tested in the forward part of an F-80 jet airplane. Actual flight conditions will relieve the boredom inherent in prolonged ground tests.—Air Matériel Command.



Prone position pilot bed from which pilots can control a plane more safely and comfortably.—US Air Matériel Command photo.

Cruiser Returned

The United States light cruiser *Milwaukee*, which was loaned to the Russians during World War II, has been returned to US Navy control. During the war, the



USS *Milwaukee* returned by Russia.—US Navy photo.

vessel guarded the Murmansk supply route over which lend-lease supplies were shipped to Russia.

The cruiser, one of a 7,050-ton class now considered obsolete, was towed to the Philadelphia Navy Yard after the transfer of control. It is to be scrapped.—*The New York Times.*

Radar on Wing Tips

A place to carry radar equipment on airplanes without using cargo space has been discovered. It is at wing tips, in bomb-like casings similar to the tanks used on jet planes to carry extra fuel.

These experimental wing-tip radio-radar domes have been successfully tested by the Fairchild Aircraft Corporation on a Fairchild C-119. They were developed for the US Air Force at the request of the Air Matériel Command.

Called radomes, they are made of plastic and built into special wing-tip sections. The radar equipment mounted in the left wing-tip dome weighs about 200 pounds. The standard radio equipment was moved to the right wing to balance the ship.—*Science News Letter.*

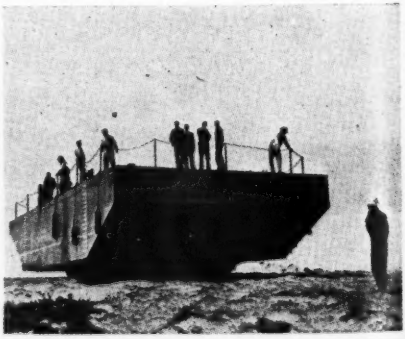
Faster Fueling

The F-84 Thunderjet fighter planes of the First Air Force are using a speed-up fueling system that is three times as fast as the conventional method.

The new method enables 20 jet aircraft to be serviced within 90 minutes when necessary, whereas a single plane requires 30 minutes to fuel up by the use of the conventional mobile unit.—*The New York Times.*

"Walking" Barge

A Navy amphibious vessel called the "walking" barge has been developed to navigate through surf, sand, soft mud, and climb embankments, as well as to operate in water. The vessel is said to "walk" because of its method of travel when out of water. The barge consists of three pontoons placed side by side; the center pontoon can be raised, moved forward 10 feet, and then lowered, after which the two side pontoons "step" forward the same way. The vehicle can carry 60 tons of men and cargo. Dimensions of the two outer pontoons are 60 feet long,



Water-land barge.

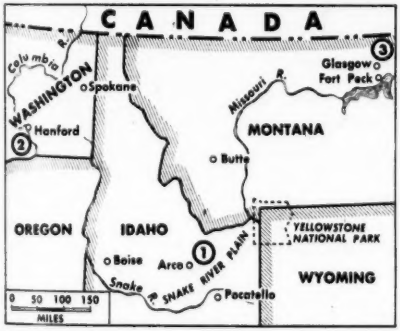
6 feet wide, and about 9 feet high. The center pontoon is 44 feet long, 16 feet wide, and 6 feet high.—*Science News Letter.*

Atomic Plant Site

A great atomic reactor testing station costing eventually "hundreds of millions of dollars" will arise on the site of the inactive naval proving grounds at Arco, Idaho, according to plans announced by the Atomic Energy Commission.

The testing station, to be built over a period of years, would supplement but not replace development and experimental work being done at other atomic energy centers, the commission reported.

However, all forces working with reactors will use the new facilities. Engineers and technicians from industrial and academic groups working in the reactor development program will be trained there.

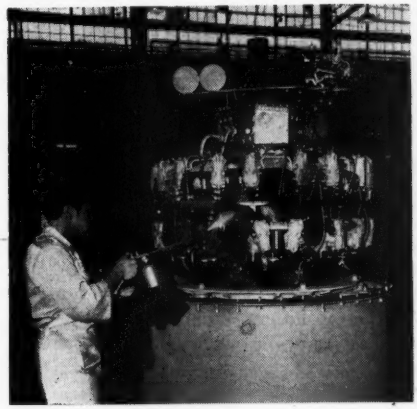


The atomic testing works to be at Arco (1) will be comparable with the plutonium center at Hanford (2). The Fort Peck-Glasgow area (3) was second choice for the plant.

Reactors are the key to the future promise of atomic energy both for military and peaceful purposes.

These uses were listed as the production of fissionable material, development of power, a means of propulsion for naval vessels and for aircraft, and production of additional radioisotopes. The latter already are being used extensively in research and have been applied in medical therapy and industrial processes.—*The New York Times.*

Engine Protection



The Navy is operating a "cannery" in Hawaii to protect replacement airplane engines from the ravages of salt air. Above, a protective covering is being sprayed on an engine. Below, the top portion of a can is being lowered over an engine; the two parts are then sealed and bolted together.—US Navy photos.

Jet-Propelled Vehicles

Jet-propelled land vehicles that might have far-reaching effects on military operations were described by a representative of the Boeing Airplane Co., at the annual meeting of the Society of Automotive Engineers.

The jet engine weighs about 1,150 pounds and produces up to 200 horsepower. The engine consists of a single-stage centrifugal compressor with two outlets, two constant-pressure burners, and a compressor-driving turbine. The primary stage, with a rated speed of 36,000 revolutions per minute, drives the accessories, while the secondary, or power-output stage, consists of another turbine with a rated speed of 24,000 rpm and a reduction gear giving rated output speed of 2,500 rpm.

The jet engine starts easily, has rapid acceleration, and goes from idle to full speed in 5 seconds. The engine, if properly balanced, operates without vibration, cannot be stalled, and is an economical burner of fuel.

Some drawbacks of the engine are its tremendous air consumption, high fuel consumption when idling, and a compressor inlet noise which so far has defied solution.—*Infantry Journal.*

Caribbean Bases

The Chief of Staff, US Air Force, has announced a reduction in the number of Air Force units and bases operating in Caribbean Air Command.

Three bases of the Caribbean Air Command will be inactivated, but the dates have not been determined. They are: Atkinson Air Force Base, Hyde Park, British Guiana; Beane Air Force Base, Vieux Fort, St. Lucia; and Coolidge Air Force Base, St. Johns, Antigua, British West Indies. These installations have been used as weather, rescue, and refueling bases.—Department of the Air Force.

Sharing Isotopes

Distribution of "nondangerous" isotopes, by-products of the piles which are used to make atomic bombs, by an international office of the United Nations is proposed by the Federation of American Scientists.

The Federation emphasizes that the isotopes are important for research in medicine, agriculture, and industry but are not useful for making atomic bombs. The suggested international office would set standards for the handling and naming of the isotopes in addition to serving as a clearing house for distribution of the material.

Although the United States has a near monopoly of these isotopes at present, the Federation report says that small uranium piles which can produce these important by-products are now operating in Canada and Great Britain.

Setting up an office for international distribution of isotopes would aid the international exchange of scientific information, counteract ill feeling toward this nation by some scientists abroad, and advance the peaceful uses of atomic research.—*Science News Letter.*

Fuels and Lubricants

Formation of a committee to determine policies on research and development in the field of fuels and lubricants as they affect the National Military Establishment was announced recently by the Research and Development Board.

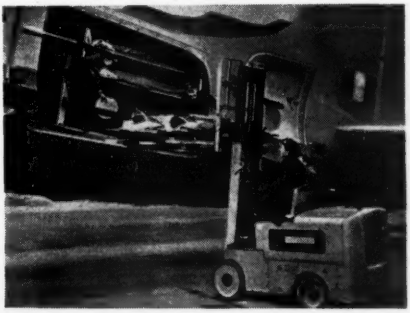
The committee's responsibilities include consideration of organic and inorganic liquid, solid and gaseous fuels, lubricating agents, hydraulic fluids, instrument oils, and antifreeze compounds. The group will also study equipment and techniques for production, storage and handling, and dispensing.

Functions of the Research and Development Board Panel on Petroleum will be assumed by the new group.—National Military Establishment.

GREAT BRITAIN

Air Evacuation

The RAF recently demonstrated a new method of evacuating casualties by air. Above, strapping a "wounded" soldier to a helicopter. Below, left, flying directly from the "battlefield" to a hospital or evacuation point. Below, right, casualties being loaded into an air transport for evacuation to a rear area.—*The Illustrated London News* photos.



GREECE

US Aid Program

In March 1947, the Greek government appealed to the United States for assistance in recovering from four invasions, lengthy German occupation, widespread systematic destruction, and the chaos which followed the cessation of World War II. The dislocation of the Greek economy as a result of the war was further compounded by violent guerrilla warfare, which threatened to destroy the integrity of the Greek nation. The guerrillas received open aid from Greece's northern neighbors, Albania, Yugoslavia, and Bulgaria. Guerrilla forces had achieved marked success by driving the rural population from the fields, creating huge hordes of refugees, seizing conscripts, destroying villages, sabotaging communications, and committing other acts of terrorism designed to hasten conditions favorable to the communist ideology and the eventual establishment of a communist government in Greece.

Above, left, an armored car being used in a current drive against the communists in the Peloponnese; above, right, a typical Greek soldier armed with a Bren gun.

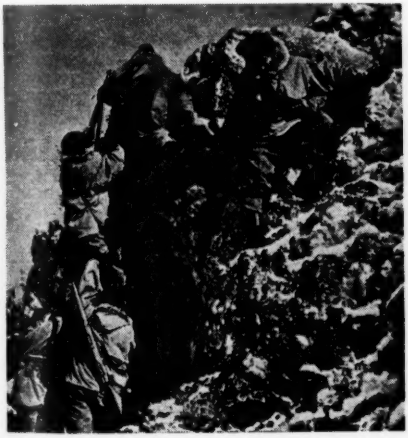
In response to this appeal for aid in restoring internal order and a more stable economy, the United States Congress passed Public Law 75 authorizing $300,000,000 for Greece in the form of military and economic aid. Economic recovery, however, could not take place until internal order was restored. On 15 June 1947, the Greek government requested United States advice and guidance in the administration of the assistance program and in effecting a reorganization and revitalization of Greek governmental agencies. Shortly after the passage of Public Law 75, small groups of US Army and US Navy personnel were dispatched to Greece. These groups determined Greek military requirements and effected close liaison with the general staff of the Greek Army and the Greek Navy. They assisted in the formulation of plans for the receipt and distribution of military supplies and for training of Greek military personnel in the use of the equipment. On 2 August 1947, the first United

States ship arrived in Greece with a general cargo of military vehicles and rations.

Early in 1948, military representation in Greece was considerably expanded to provide operational advice to Greek military forces in their action against the guerrillas. To provide this operational advice for all echelons down to division level, a Joint Advisory and Planning Group was formed. Although the bulk of personnel comprising this group are United States Army personnel, the Navy contributed advisers from the United States Navy Group, and the Air Force provided air advisers for an Air Section. This latter section operates as an integral staff section of the Joint Group and the United States Army Group, Greece.

There are no United States combat troops in Greece. United States military personnel do not participate in combat nor do they command Greek troops. However they do accompany Greek units engaged in attacking the guerrilla concentrations in order to be able to provide intelligent and timely advice to Greek commanders and staff officers.

In developing a balanced Greek military establishment, the United States Army has shipped 408,763 measurement tons of supplies at an aggregate authorized expenditure cost of $182,147,060. These supplies included rations, trucks, ammunition, weapons, communications and fire-control equipment, engineering tools, spare parts, maintenance equipment, and many other items.



Above, left, Greek mountain troops establishing a mountain ambush; above, right, women communists captured in the battle of Florina.—*The Illustrated London News* photos.

The Greek Army has been handicapped to some extent by the necessity for simultaneously conducting operations against the enemy and training. One of the greatest training deficiencies is the lack of thorough unit training. The average Greek soldier is given approximately 60 days of individual training. Then he is assigned to a combat unit.—*Annual Report of the Secretary of the Army.*

PHILIPPINES

Philippine Scouts

The disbanding of the Philippine Scouts this year closes a gallant phase of Filipino-American history.

The US Army decided to give up the organization of Filipino fighting men which had functioned within the United States armed forces for almost half a century. Several units already have been inactivated.

The dissolution of the Scouts is in keeping with the Army program for reduction in force. Since 3 July 1946, the Philippines has been an independent republic but the Scouts continued as an American unit. Some of the Scouts will be absorbed by other units of the US Army.

The Scouts, together with certain United States outfits, bore the brunt of the fighting on Bataan in the early days of the war with Japan. They received unstinting praise from their American comrades. Of the 12,000 Philippine Scouts in 1941, only 6,000 survived. Most of the others died fighting.

After World War II, the US Army built an organization of more than 20,000 Philippine Scouts to assist in maintaining American military bases, reconstruction work, and guarding American installations in the Philippines.—News reports.

DENMARK

Air Defense Plans

Copenhagen reports state that the Danish Air Force is considering purchasing 65 jet fighters from Britain during the next 2 years. The Danish Ministry of Defense has been authorized to buy 30 fighters for delivery in the 1949-1950 fiscal year, and it is also expected to buy another 35 for delivery the following year. A Danish mission is being sent to London to conclude the negotiations which are understood to have been going on for some time.—*The Aeroplane.*

ARGENTINA

National Defense

A Ministry of National Defense was created in the recent reorganization of the Argentine government. The new ministry is divided into three sub-secretariats as follows:

1. Military. This agency is responsible for military activities.

2. Technical. All technical functions, such as the production of military and civilian aircraft, come under this sub-secretariat.

3. Civil. This agency deals with the problems of civilian activities.

The Ministry of National Defense will coordinate the efforts of all the armed services, the Army, Navy, and Air Force. This will be done through a General Staff for Coordination.—*Aero Mundial Suplemento Argentine.*

CANADA

Radar System

Integration of the Canadian armed services with civilian preparedness took another step forward recently when the Canadian Minister of National Defense announced the formation of a special radar and communications unit of the Royal Canadian Air Force in Montreal.

The over-all plan provides for a pool of trained reserve technicians, invaluable to the service and to private industry. The new unit will control radar and communications facilities for the two Montreal auxiliary jet fighter squadrons and their signals services.

To emphasize the need for the peacetime development and maintenance of radar and ground communications, it was pointed out that under wartime conditions it took 3 years to produce a system of radio and ground communications to make effective use of aircraft. To couple communications with the early warning screens would probably involve a 5-year program of manufacture and training.—*The Aeroplane.*

The Strategic Importance of Oil

JM - not in Army Lib. 7/13/49

Translated and digested by the MILITARY REVIEW from an article by Captain Claës Westman in "Ny Militär Tidskrift" (Sweden) No. 10, 1948.

IN the age of total warfare, economic factors are assuming increased importance. This manner of conducting war assumes many forms, of which the struggle for the world's raw materials may be given first place. The outcome of World War II confirms this view. Both the strength and later weakness of Germany and Japan was connected to a large extent with the foresight of these countries in storing or seizing possession of enormous quantities of raw materials and with their later inability to maintain and exploit these resources.

Among the raw materials, oil, iron ore, and certain other metals are the most important. It is therefore natural that the eyes of the world and, above all, those of the great powers, are more than ever directed toward these particular items of natural wealth. Oil, without doubt, attracts the greatest general interest. This is true because such supplies as iron ore, coal, and raw materials for textiles are relatively abundant and more evenly distributed throughout the world than oil.

The World's Oil Deposits

In 1947, the known reserves of crude oil were estimated at between 10 and 11 billion cubic meters, distributed approximately as follows:

	Millions of cubic meters	Percent of the world's total
United States	3,420	31
Caribbean area (Venezuela, Mexico, Colombia, etc.)	1,200	11
Middle East	4,770	44
Soviet Union	1,100	10
Dutch East Indies	140	1
Other parts of the world	270	3

The Middle East reserve is probably surprising, because only a few years ago it was said that the United States had the greatest oil reserves in the world.

The above quantities by no means represent all of the world's deposits but only those which are already known and which can be profitably exploited by present methods. American experience indicates that it is not usually possible to obtain more than about 40 percent of the total quantity of oil existing in an oil-bearing region. If this figure is taken as an average for the entire world, hitherto discovered deposits will amount to about 26 billion cubic meters. To this may be

added the potential supplies, the oil not yet discovered but which geologists believe exists. In the Middle East alone, these probable resources are estimated at around 15 billion cubic meters. In the United States, it has been estimated that a like amount exists, although this seems to be rather optimistic. Therefore, the entire world's oil supply should approximate the following:

11 billion cubic meters, already discovered and exploitable.

15 billion cubic meters, discovered.

25 billion cubic meters, not yet discovered.

51 billion cubic meters, total.

Alarming statements have appeared on various occasions as to the world's present and future scarcity of oil. That this scarcity should be caused by inadequate oil supplies is erroneous, as is evident from the preceding figures. On the contrary, the present oil supply is good, and there has been an uninterrupted succession of discoveries of new reserves.

In 1947, oil production increased to around 410 million tons, or about 450 million cubic meters. Even if only about 30 billion cubic meters of the world's reserves can be exploited, this amount still should last for 65 years at the present rate of consumption. With a 50 percent estimated increase in consumption by the middle of 1950, the supply would still last for 45 years. Not even by the year 2000 will the world need to be without oil. New methods will be discovered to better exploit the heating qualities of oil; it may be obtained from slate, natural gas deposits, and coal, providing, of course, that the development of atomic power does not render such efforts unnecessary before that time.

Production and Consumption

The fact that oil resources as a whole are relatively satisfactory, however, does not give the great powers a feeling of security. It is essential for them to control the oil deposits, possess an expanded refining industry, and have an adequate transportation capacity which will provide long-range security for the country's oil requirements in both peace and war.

The motive for the political, military, and economic activity of the great powers, especially the United States, on the international oil stage is therefore to be found in the relationship between supply and demand and the distribution of the oil reserves in the different parts of the world. The following table, compared with the figures already given relative to oil deposits, gives an idea of the situation:

	Production, 1947, crude oil, millions of tons.	Consumption, 1947, oil products, millions of tons.
United States	250.0	270.0
Venezuela	63.5	
Mexico	7.2	82.1 — 20.0[1]
South and Central America and others	11.4	
Middle East	41.5	negligible
Soviet Union	26.0	30.0
Dutch East Indies	2.5	negligible
Remaining parts of the world	7.9	[2] — 80.0[3]

[1] Estimated.
[2] Inclusive of Rumania, about 4 million tons.
[3] Inclusive of Europe, nearly 40 million tons (Sweden about 3.0 million tons).

Since United States consumption occupies so dominating a place, it may be of interest to consider it further. Available statements on further developments show the following figures for United States consumption:

1939	176	million tons
1945	240	" "
1946	240	" "
1947	270	" "
1956	330	" "

The increase in consumption from 1939 to 1945 was mainly a result of the war. After the end of the war, it had been expected that production would easily cover postwar civilian requirements, with the extra requirements for the armed forces estimated at around 70 million tons per year (200,000 tons per day). But instead

of this, an oil shortage occurred which reached its maximum in the winter of 1947-1948. The causes of this were lack of refinery capacity and transportation difficulties, and the fact that US civilian consumption increased at the unanticipated rate of 50 percent from 1945 to 1947. By 1956, an additional rise of 37 percent is expected. This increase has resulted from the enormously increased natural, considering both the amounts of reserves there and the fact that their exploitation as yet has been relatively slight. In view of the increased consumption in the United States, one can understand that country's need of a timely increase of its influence over the oil fields of the Middle East before its own deposits, including those of the Caribbean area, begin to play out or become less profitable to

The presence of large oil reserves gives added strategic importance to the Middle East. Above, the oil refineries at Abadan, Iran.—US Army photo.

use of fuel oils in industry and electric power production, a four-fold increase in the use of Diesel power on railways, the rise in civil aviation, increased use of automobile transportation, and a certain amount of strategic oil storage.

Oil Policies of the Great Powers

That the Middle East should be the center of interest for the great powers is operate. The United States' dependence on Middle Eastern oil has created a clearly discernible trend in its foreign policy in recent years.

The United States has secured great oil concessions in the Middle East, principally in Saudi Arabia and the small islands of Bahrein. The advantage of these contracts is that they have been entered into with American oil companies

and—at least officially—are not influenced by American foreign policy.

Other signs also point to the close connection between American foreign and oil policies. The extensive economic and military help that has been given to Turkey clearly has as its object the strengthening of the northern flank of the oil region, just as the soothing of relations with Spain is to keep Franco amicably disposed toward the free passage of American shipping.

British policies, to a large degree, follow the same lines as the American. England's long experience in administration and oil well operation in this part of the world, and her influence in Iran, together with the power and the industrial resources of the United States, have led to close cooperation between these countries. After many years of difficulties in Palestine, England, as well as the United States, has refused to make troops available for the division of the country. Because of her earlier promises to both Jews and Arabs in the Balfour declaration, Great Britain perhaps occupies an even more difficult position than the United States.

But though the previous British-American rivalry for eastern oil has now changed to close cooperation, Russia's aspirations remain the same. These have been centered on the oil-producing regions of northern Persia, which form part of a geological belt which circles the Caspian Sea. A year or so ago, the Russians displayed great activity in Azerbeijan, whose population, according to the Russian concept, belonged to the Soviet Union. Long negotiations were carried on with the then Shah of Persia concerning the formation of a Russo-Persian oil company which would be granted concessions in those regions similar to those which the Anglo-Iranian Oil Company possesses in southern Persia. After various internal troubles and disturbances, however, the Persian popular assembly repudiated the agreement. Since this failure, Russia has turned her attention to another quarter of which she can be quite sure, but she has not abandoned the quest for Persian oil.

Thus, the Western Powers occupy a strong position in the Middle East at the present time. Because of the extremely unstable conditions in this part of the world, a change can occur quickly, especially since a wave of distrust and hatred toward all the Western countries is passing over the Orient at the present time.

Military Measures

In order to safeguard the exploitation of the oil deposits under all circumstances, strong military protection is necessary. The Caribbean area lies within the defense zone of the United States and its military protection has therefore received little attention outside the Western Hemisphere. The Middle East, on the other hand, is a zone of many conflicting national interests, and the military measures taken for the protection of its oil resources have naturally attracted much more attention.

The United States has shown its determination to maintain unobstructed passage through the Mediterranean by stationing in these waters a naval force which visits "amicably disposed nations" in those latitudes. This naval force is, as a rule, based in the Eastern Mediterranean. Among other American measures, the delivery of weapons to Turkey has already been mentioned.

Great Britain has had important army, naval, and air forces based in and around the Mediterranean Sea for a long time. A considerable reduction was made, however, after World War II. Among other things, the troops in both Egypt and Palestine and the naval base at Alexandria were evacuated. The English Mediterranean Fleet is probably somewhat inferior to the American at the present time. As compensation for her lost bases, England is de-

veloping new bases in Cyprus and the English Sudan. In addition, Englishmen for many years had charge of training and contributed to the equipping of the armies of various of the Arabian States. Consequently, an opportunity could likely be found, for example in Trans-Jordan, for posting certain forces for the protection of the Suez Canal. British influence in Iran has already been mentioned.

Russian countermeasures against the dominance of the Western Powers in the Mediterranean have not been lacking. Russia's hold on the Balkans (Greece and Turkey excepted) is unyielding and needs no further mention. Her activity on the "inner front" in such countries as Italy, Greece, Egypt, and Northern Persia goes on tirelessly in the established communist manner. The political activity which has awakened powerful repercussions over the world consists, in the main, of two operations. These are: the "cold war" against Turkey in connection with the effort to get a revision of the Dardanelles agreement, and the proposed leasing of the Pola naval base in Jugoslavia. Here, Russia intended to base her share of the Italian fleet, consisting of one unit built in the 1940s and two older battleships, and a couple of cruisers as a nucleus. Later, this fleet was to be replaced by new ships. These moves were interfered with, however, by Turkey's resistance, backed by the Western Powers and by Tito's surprising "unreasonableness."

Although the Western Powers' dominance in the Mediterranean, under present circumstances, is quite convincing, one must not forget Russia's strength on land and her close proximity to the oil fields of the Middle East. With an increase in oil production in this part of the world, the chances for military operations in this region in the case of a conflict between the great powers also increase. There is no doubt that a sudden interruption in the flow of oil from this region would do serious harm to those benefiting from it at the present time.

It is to be presumed that conflicting interests will be brought into the limelight before long, when the difficult and thus far unsolved problem of the status of the former Italian colonies in North Africa is again dealt with.

Economic Activity

The economic policy of the great powers in the matter of oil, particularly that of the United States, is dictated by three things: the right to work the oil deposits, expansion of the refining industry to keep pace with increasing consumption, and development of transportation facilities.

Several years ago, American oil companies had control of between 50 and 60 percent of the world's oil deposits. With the new discoveries which have been made and which are being made in the Middle East, this figure has probably increased to nearly 70 percent. The most important American oil concerns in that region are located in Saudi Arabia and have oil rights over nearly half of the country. The American companies also have interests in Kuwait, Iraq, and in a number of other Middle East countries to a smaller degree.

The British concessions are concentrated in southwest Persia where the Anglo-Iranian oil is located. The company, more than half owned by the English government, also shares concessions with the Americans in Kuwait.

The principal oil deposits in Iraq, as also in Syria, Lebanon, Palestine, and Trans-Jordan, are owned by special oil companies jointly formed by the leading oil companies of the United States, England, France, and Holland.

The concession grants, which are long-term, often for a period of 50 to 60 years, give the Arabian States and their rulers very considerable incomes. The price is

reckoned usually on the basis of tons of crude oil obtained, payable in dollars or other currency of "firm value."

It is obvious that this enormous expansion in the oil industry creates a great need for new investments of capital to be used for exploration, drilling equipment, tanks, refining installations, and means of transportation. The American, English, and Dutch oil companies have acquired a great amount of new capital in the last few years for these purposes. The United States calculates that the staggering sum of around 13 billion dollars will have to be invested during the years 1947-1952, 7 billion of which will be invested in the United States and some 500 million in Saudi Arabia alone. A large part of the investments go to the expansion of transportation, which is natural in view of the long voyage from the wells to the consumer. The problem of oil transportation has long been given great attention in the United States, where distances are considerable, even when the oil has been obtained in that country itself or from the Caribbean area. The problem is even more pressing now that the center of gravity of oil production has been shifted to the Middle East. But, above all, the 3,000-mile sea journey from the Persian Gulf around Arabia to the Mediterranean represents a time-wasting and expensive journey which can only be avoided by laying a pipe line directly from the oil wells to the Mediterranean coast. The two old lines from Kirkuk in Iraq to Tripoli and Haifa, respectively, are quite inadequate at the present time. No less than four new giant lines are now under construction, two from Iraq, one from Abadan in southern Persia, and one from Ras-Tanura in eastern Saudi Arabia. Several more are probably planned. The capacities and costs of these installations are great.

Also, the world's tanker fleet is growing, due to the continued construction of ships. The transportation capacity of the various vessels has been increased by making them faster and larger. A speed of about 15 knots, and a carrying capacity of up to 25,000 tons, is not unusual. Oil companies have a great interest in tanker transportation and probably own considerably more than half of the world's tanker fleet of around 24 million tons. Standard Oil and the Texas Company, for example, formed a tanker owners' organization several years ago. At the present time, this organization has at its disposal some 100 ships, many of them being obviously intended for the transportation of crude oil from the Middle East to the United States.

It is apparent that the great powers accord absolutely first place to the problem of their oil supply and will spare neither means nor expense in solving it.

The capacity for making war is not separable from economics any more than it is from diplomacy.

Former Secretary of Defense James V. Forrestal

Are Commandos Really Necessary?

JM

Digested by the MILITARY REVIEW from an article by Lieutenant Colonel J. P. O'Brien Twohig in "The Army Quarterly" (Great Britain) October 1948.

A CONSIDERABLE body of opinion in the British Army did not and does not agree that the Commando, as organized in the recent war, gave the best results for the expenditure of men and material.

When the divisions of the British Expeditionary Forces were reforming in England after the fall of France, the term Commando first came to notice and recruiting for them began. Commanding officers were faced with a long period during which offensive operations against the enemy were improbable and the Commando plan, as it was put over, seemed to fill a real need. Roughly speaking, the proposal was for volunteers to do a tour of training and operations with the Special Service Brigade and then return to their original units, which continued to maintain a flow of suitable volunteers. The value in keeping alive the offensive spirit and developing new training tendencies during a difficult time needs no stressing. Owing, I gather, to circumstances over which the Commando raisers did not have control, this system broke down as regards frequent operations against the enemy.

The result was that, instead of forming a magnificent training and battle school for junior leaders of the field army, the Commando hardened into a specialized unit which demanded the best of the field army and returned nothing but its rejects. Intentionally or otherwise, it developed into a "shock troop" unit, something on the German pattern, but it remained organized on British civil billets and incapable of looking after itself as a unit in the field for any length of time.

On the credit side, there is no doubt that the field army owes a big debt to the Special Service Brigade and its Commander, General Haydon, for injecting new life into training methods. During 1941, when the Special Training Centre was working both for the Field Army and Commandos, most infantry officers remained unconvinced by the arguments of Commando officers that the Commando would not be of even greater value if it had a more normal organization.

The requirements of a Commando soldier, such as fitness and night vision, were much less comprehensive than those given for a good infantryman by Lord Wavell. To say that only 50 percent are up to this standard is merely stating the obvious. Having shed the 50 percent of personnel not up to standard and most of the unit transport, and played havoc with the war establishment and stores, Commando advocates admit they cannot be asked to carry out the role of an infantry unit. Indeed, if divorced from other military agencies, they require someone else to maintain them.

Surely, the Commando advocates are not serious in maintaining that billeting troops independently on the civil population is a sound way of inculcating initiative. That this system resulted in lowering the fighting value of Commandos in the field was demonstrated in the Far East and other theaters.

Patrolling and, to an extent, raiding, are normal infantry duties. In an attack—especially across an obstacle—the duties that fall to an infantry battalion correspond closely to those of a Commando. Immediately taking part is about half the unit strength, and those mainly the fittest available. There is little or no normal transport, and the task will cause the arming and grouping of the troops to vary. The great advantage, however, is that the extra weapons, personnel, and administration to enable the unit to hold on to what it seizes, are readily available. No one would

deny that special training and equipment are required for particular tasks, and in fact only too often has the normal infantry unit been asked to cross obstacles or climb cliffs and make passages by sea with quite inadequate training or none at all.

The question of airborne forces and the Chindits of Burma are only mentioned in passing. The really big fact established by General Wingate surely was the enormous adaptability of the "normal," even the "sub-normal," soldier and the essential soundness of the battalion organization as a basis. As a *sustained* effort was needed, this was not surprising.

But the analogy between Commandos and airborne units is closer. Yet the airborne unit was deliberately developed away from the Commando framework and the aim is to get as close an approximation as humanly possible to the normal unit organization. If the Commando framework is sound, then the "tail" which enables an airborne unit to function pretty well as a normal unit is extravagant and unnecessary. Taking the parachute soldier as having much the same training as a Commando soldier—remembering how expensive in time and training arrangements the actual parachute training is—the argument against expending him in ordinary operations is considerable. This is considered unsound and the practice in the late war and the present doctrine is to emphasize that the parachutist is a normal, highly trained soldier who is capable of reaching the battlefield in one additional way. It is established that it is bad both for the Army and the airborne unit to preserve it unduly for use in an airborne role and airborne formations can and are used in a normal way by the addition of extra supporting units from theater resources.

Many distinguished soldiers have laid down the common-sense dictum that eventually it is the section commander and junior leader who wins the battle. More and more as the war continued did the unit commander feel the lack of good junior leaders and many a shambles occurred due to this lack. It can hardly be denied that this want would have been much less had the Commando force not been allowed to expand as it did. The gallantry and skill the Commandos displayed did not compensate for the dearth of good junior leaders to which their existence was a big contributing factor.

In war, there will be need on occasion for specialized parties. But, where it is impossible to produce such parties by adapting existing units, they should be allowed to exist only so long as they fulfill the actual function for which they were designed. Only by this can the gross waste of high-grade personnel be avoided. It is the disinclination to disband, and the consequent search for a justifying role, which has caused the "private army" to be looked upon with such suspicion. Excluding, perhaps, the more highly specialized reconnaissance patrols on enemy coasts, what tasks undertaken by Commandos in the late war could not have been accomplished by units given special training? Their employment in this way would also have raised the general standard of the Army instead of the reverse.

It is entirely sound that an organization should exist to study the more specialized tasks, to experiment, to devise new methods, and to keep training and equipment at the highest level of efficiency. Its objective, however, should be to keep to, or recommend adaptations of, existing proved organizations.

It is to be hoped the Army will manage to find a unit, with the necessary specialists attached, to carry out training experiments with the Royal Marine Commando Brigade. Incidentally, the Marine

Commando is developing into something approaching a light battalion.

With close links between the Combined Operations organization, the Royal Marines, and the School of Infantry, there is every hope that raids and other Commando-type operations will be dealt with adequately and more economically than by raising large numbers of specialized troops capable only of a specialized function.

The World Situation Through Russian Eyes

Digested by the MILITARY REVIEW from an article by Major D. G. B. Boyd in the "Journal of the Royal United Service Institution" (Great Britain) November 1948.

IN *Blueprint for World Conquest*, the program of the Communist International, as adopted by the Sixth World Congress on 1 September 1928 at Moscow, is set out in exact translation. It remains today the unvarying program of world communism, and the revival of the Cominform at Belgrade is merely a means of its extension.

Careful study of this document reveals that no mention is made of aggressive military war initiated by the USSR. Instead, the emphasis is always on the defense of the USSR against an unexpected "capitalistic" attack. Such an attack is recognized as being extremely formidable, owing to the military power of the capitalistic states. The theme throughout appears to be two-fold. First, and above all else, comes defense. The USSR is recognized as "the only fatherland of the *international* proletariat, the principal bulwark of its achievements, and the most important factor for its international emancipation; the *international* proletariat must for its part facilitate the success of the work of socialist construction in the USSR, and defend her against the *attacks* of capitalistic powers by all possible means. . . ." Thus, as a corollary, if Russia is attacked by the capitalistic powers, the communist parties inside the capitalistic and imperial states must cooperate with the proletariat inside the USSR in destroying the capitalistic power to wage war by the use of strikes, boycotts, and internal revolution.

The two factors leading to eventual world domination are an invincible hard nucleus of highly organized and disciplined communism within the USSR, and the steady strengthening of communist parties in capitalistic and social-democratic countries and their colonies and dependencies. When strong enough, these communist parties, by legal methods, can seize power in the capitalistic parliaments and then convert the countries to communist states. The object of this paper is to examine the growth of power in the USSR and to attempt to forecast her means and chances of achieving such world domination.

World Program Developed

Up to 1933, the program as set out in 1928 progressed on a relatively even keel. The USSR was rapidly arming herself for her own protection against the capitalistic powers, particularly Great Britain, France, and Japan. She had good reason to believe that against the first two she had by then achieved a reasonable state of defense. She had the greatest army and air force in Europe. In the Far East, she was capable of building up sufficient defensive strength to deter Japan from adventures other than in China. The hard central core had been created, and the communist parties in capitalistic countries were gaining strength. She was using the League of Nations to improve their

position and to dupe the Western world into believing that she was cooperating for peace and stability.

Then the scene changed. Suddenly, and at increasing tempo, Germany, Italy, and Japan began to arm for an imperialistic war. As a result, the nucleus in Russia, far from being secure from the West or the East, was rapidly becoming in danger of being destroyed by the nations of the anti-comintern pact in their pursuit of world domination. So the emphasis changed to greater defense of the nucleus, and the communist parties in capitalistic countries were left to get on as best they could. This state of affairs continued until 1945, when the USSR found herself in possession of Eastern and Central Europe and with control over the former Japanese dominated areas of Northern China and the Kuriles.

To the USSR, the situation in the spring of 1945 must have seemed very similar to that of 1933. The inner nucleus of the USSR, though terribly weakened by the German invasion and the retreat from Moscow and Stalingrad, was secure. The occupation of the satellite countries from Northern Korea to Yugoslavia and Poland provided a cushion behind which the nucleus could be built up to produce the hard, impregnable bastion from which outside communist parties could derive their strength and funds.

But there was one great and unexpected difference from 1933. The United States, having become a great world power, was equally determined to oppose the spread of communism in all capitalistic countries by substituting her democratic conception of the four freedoms. She was evidently prepared to support that policy by generous gifts of dollars, food, industrial equipment, and raw materials. By 1948, it was apparent that the United States was considering the employment of military power to prevent the countries she was aiding from being overrun by the Soviet armed forces. The change was unexpected. Up to 1945, Russia had imagined that, though weakened internally, her territorial gains in Europe and Asia, and her mobilized armies and air forces *vis-à-vis* American and British demobilizing armed forces, could adequately maintain the *status quo*, giving her breathing space to rebuild her industrial power to support conventional weapons. This conception was rudely shattered by the first atom bomb on Hiroshima.

Atom Bomb Changed Concepts

The atom bomb changed everything. It was a well-kept secret, and its very existence caused consternation in Russian circles. Its arrival caused a hurried review of Soviet policy. No longer was the nucleus secure. Long-range American bombers carrying atom bombs could threaten the heart of the nucleus from Western Germany, Austria, and Italy, and perhaps Turkey, the Middle East, and India. Far from being secure, the hard core of communism suddenly appeared to be horribly vulnerable. What then was to be done to further the aims of Soviet policy outlined in 1928? The first thing to be attended to was, once again, defense, essentially antiaircraft and fighter defense for the centers of industry, and to pursue a policy of limited expansion in order to extend the range of American bombers. As regards the latter, four areas appeared to offer chances of *fait-accompli* action, without precipitating a general war. But, if a general war would be caused by such action, then it should not be pushed to the limit.

The first of these areas was Germany and Austria. The plan is clear there: first, the elimination of the Western Allies from Berlin and Vienna; then the creation of a Russian-sponsored German and Austrian government; and finally, if possible, a German and Austrian Peace Treaty requiring the removal of the Western Allies'

forces. Von Paulus' army could then look after Germany and Austria for the Russians defensively.

The second area was Italy and Greece. Here were two countries from which American bombers could launch atom bombs. If such an attack were made, perhaps the areas could be rapidly overrun by the Russian armies, but that might be too late to prevent great damage being done. Somehow they must be secured. The pattern in Greece was guerrilla war against the Greek government with satellite, but not Russian, intervention. In Italy, the pattern was support for the communist party in the hope that they might obtain control of the country by parliamentary means. In the teeth of intense Russian pressure, all the Soviet objectives in these two areas have so far been checkmated by the Western Powers. Reactions to this Western success have been such as to indicate that the above thesis is correct. In fact, Russia continues to pursue them to a degree only short of open war.

The third area was the Middle East, particularly Turkey and Persia. Pressure has been brought on both these nations, so far without effect. Further attempts are likely to be made, particularly against Persia, but America and Britain are now vitally interested in the sovereignty of both these countries. It appears unlikely that they will surrender it to Russia, except by an act of war. War, at present, is not the answer to Russia's problem, which is the defense of the nucleus.

The fourth area was the Indian Continent and the territories of Southeast Asia and China. Except for Northern China and Korea, these areas were too far removed from the centers of Russian military power in 1945 for communist governments to be set up by direct Russian intervention, as in Eastern Europe. The pattern in India and Southeast Asia was communist infiltration. This was considerably aided by the general unrest and outburst of nationalism following the Japanese surrender, leading to rebellion against the established governments in Burma, Malaya, Indonesia, and Viet-Nam. This trend has been, or is now in the process of being, resisted by the armed forces of the respective colonial powers, and by the efforts of the independent Burmese government. Russian military intervention in the closing stages of the Japanese war in Manchuria and Korea paved the way for civil war in China. It is in this area that communist gains have been most spectacular, though there is some doubt concerning the degree of cooperation between the Chinese communists and the Kremlin. The main resistance to Soviet expansion in China was American military and economic assistance to Chiang Kai-Shek, American predominating influence in Japan, the Philippines, and the Pacific island bases, and British stability and prosperity in Hong Kong.

The range of modern aircraft is increasing, and by now the Kremlin must be considering whether the originally conceived "cushion" of satellite or occupied states around her borders can prove an adequate buffer to modern strategic bombers. Should Russia occupy areas beyond these countries with her armies, the Western Allies could still strike at her from North Africa, China, Japan, the Pacific Island bases, and Britain. In such event, Russia would not have materially furthered the primary object or the defense of the nucleus. So for the present it appears that she has withdrawn from an attempt at expansion, thus leaving the Western nations to benefit by the Marshall Plan, though making every attempt to sabotage it by communist party action from within. The nucleus is still not secure and will not be until Russia has reached parity in the new weapons and is able to achieve security by the threat of retaliation. The success of the Eniwetok experiments may have retarded still fur-

ther the attainment of her primary objective.

Setbacks During 1948

The year 1948, therefore, closed as Russia's most disastrous year since 1928. She is utterly alone, weakened still further by Yugoslavia's defection this summer. She faces a hostile and potential colossus which is many years advanced in the technological "know-how," skill, and industrial organization to support a modern electronic war. Moreover, Russia has a major adversary with adequate money to restore the present weakened Western nations to sufficient prosperity to retard the growth of communism within their borders. Great Britain has given freedom to India, Pakistan, Ceylon, and Burma, and has thus gone some way to neutralize a fertile field of communist infiltration by encouraging nationalism and patriotism. The Dutch and French are in the process of pursuing a similar policy in Indonesia and Viet-Nam—both areas of communist infiltration. In the Middle East, the Arab nations are trying to achieve, under British guidance, their long-desired aim of a true Pan-Arab bloc. The Jews, assisted by the United States, should secure the reasonable boundaries of a Jewish homeland. The policy of Israel, once the borders have been settled, will not be pro-American, pro-British, pro-Russian, or pro-Arab, but essentially pro-Jewish.

Russia is in fact just now on the horns of a dilemma. If she uses the Soviet army to expand her present borders, she could, it is true, soon reach the Pyrenees and the Atlantic coast, occupy all Scandinavia, dominate the north shore of the Mediterranean, overrun Turkey and Iran, and drive deep into the Arabian peninsula. But when she has reached these points, it is probable that they represent her limit. Certainly in Arabia, and possibly in Spain, she might place herself in a position to be successfully counterattacked. She would, in fact, have done little to solve the pressing defense of the nucleus. Further, she would have performed an act least calculated to achieve the goal of world communism. By attacking capitalistic countries, she would have incited them to resist aggression and given the governments of those countries an opportunity to rally all their people to defend their country with a fanatical patriotism. In the aftermath of attack, she would have to cope with a resistance movement such as she herself organized against the German invaders.

It seems that Russia will now consolidate her gains and give first priority to defense. There will be no change in her policy and world communism will remain the ultimate aim. She will remain highly mobilized for the next 10 to 15 years, in order to insure defense by conventional weapons, until she has developed atomic bombs and has a large stock pile of them. Then the wheel will have come full circle. Once again the communist parties in the capitalistic, social-democratic countries, and their colonies and dependencies, will be given the means to extend world communism by internal revolution.

It therefore behooves the Western nations to organize themselves for economic cooperation and prosperity in the next 10 years, in order that all their peoples will enjoy such contentment and their colonies and dependencies will have the widest possible measure of self-government.

But there is another aspect. The argument given above indicates that until about 1960 Russia will be striving to achieve her own security. It is probable that she will never achieve both sufficient security at home and sufficient communist party strength abroad to realize the 1928 dream of world communism. She will then have two courses open. One will be to remain static and possibly disintegrate into her component nationalities. Alternatively, she may revert to traditional Russian imperialism. The tradi-

tional Russian imperialism is not world conquest, or anything approaching it. It is a continuous striving for warm water ports and the oil-bearing areas of the Middle East. Both these objectives lie in the Middle East, and it is in this area that her thrust may be made. As her industrial power develops, her meager oil production (5 percent of the world's total) and her proved oil reserves (5 percent of the world) will not be sufficient to support it. If she cannot find more oil within her borders, she will have either to acquire it in the adjoining Middle East, or disintegrate. If Russia is to be prevented from overrunning the Middle East, the Americans should assist the British in peacetime to maintain sufficient forces to insure its defense and to increase their economic interests in this area. Mutual defensive treaties with the Arab States and Israel would be the logical outcome of this policy.

American Foreign Policy

Logically, therefore, the main objectives of American foreign policy in the future would seem to be:

1. To support the Western Nations with the Marshall Plan and to promote a Western Union, as a bulwark against the spread of world communism.

2. To promote stability in the Far East by giving military and economic aid to China in order to resist the spread of world communism.

3. To promote stability in the Middle East by mutual defensive pacts with the British, the Jews, and the Arabs, in order to combat a renewal of Russian imperialism.

4. When the third objective has been achieved, to insure that the surplus oil of the Middle East is available for all nations, *including Russia,* and that if necessary Russia has a share in its production.

This, then, is the pattern for world peace, the means of achieving stability, and the only way of containing, and eventually dispersing, the dark clouds of slavery cast across the world since 1917. It is a policy of mutual defense and cooperation between all nations, including eventually the peaceful Russian people.

Mercenaries

JM

Digested by the MILITARY REVIEW from an article by Lieutenant Colonel M. St. J. Oswald in the "Journal of the Royal United Service Institution" (Great Britain) November 1948.

IN PEACETIME, the two greatest handicaps under which the British Army labors are financial stringency and shortage of manpower. In any future war, the purse strings will again be loosened, but lack of numbers will be felt more acutely than ever. More men than in the past will have to be retained in essential industry in order to supply the services with their needs. The antiaircraft defense of this country may well make even greater inroads into our available manpower. Furthermore, we can no longer rely on Indian troops being used outside the frontiers of their own country.

In the last two wars, France was able to mobilize large armies. At the outset, these armies kept the enemy at a distance from the English Channel. That France will be able to repeat this in the future is doubtful. Britain's only substantial ally, the United States, is on the far side of the Atlantic. However prompt may be the intervention of her air and naval forces, she cannot be expected to deploy her Army on the Continent in time to

withstand the first shock of another onslaught.

In time of peace, our need is for sufficient Regular recruits to provide the garrisons of our overseas bases, to train the National Servicemen, to assist the Territorial Army, and to form reserves which can be sent to any trouble spots at short notice. During a period of high wages and full employment, it is impossible to obtain sufficient good quality recruits unless we are prepared to bring their pay and prospects into line with those in civil occupations. This we apparently cannot afford to do. Like all great Empires in the past, we shall, therefore, have to rely on the use of mercenaries.

To some extent, we have already accepted this principle and are only too glad to employ Gurkha troops in Malaya. Far nearer home, there is a larger and, for the purposes of modern warfare, better source of mercenaries. This source is Western Germany, which is already over-populated with some 40 million inhabitants. Traditionally, Germany has always been one of the greatest producers of mercenary troops. Even today, the bulk of the French Foreign Legion is still German. The Western Zones are full of young men, most of whom have had war experience. They have little hope for the future, are disinclined to engage in any legitimate trade, and are rapidly drifting into crime, apathy, and general disillusionment. At heart, they are still soldiers. Their qualities need no emphasis.

We should, therefore, accept a limited number of German recruits into the Regular Army. That these recruits would be forthcoming is not in doubt, provided the terms of service are reasonable and are given good publicity. None of the occupying powers could be described as popular. Of the four, Great Britain still probably retains the greatest degree of respect among the Germans. If given the choice, they would prefer to enlist in the British Army rather than in any other. Our only rival in this respect is America, who, in any case, has all the manpower she needs. The number of volunteers would, in fact, be so large that we could afford to pick and choose and thus insure that the quality was of the highest.

The advantages of adopting this proposal are that it would:

1. Save British manpower.

2. Overcome the shortage of Regular recruits.

3. Raise the standard of recruits by importing a nucleus of high-class professional soldiers.

4. Help to link the British and other Zones more closely with Britain. The returning soldier would be a far more potent advertisement for the British way of life than all our present efforts at re-educating Germany.

5. Establish a connection between Germans and the British Army. Germany by herself cannot be a threat to the peace of the world for many years to come. In any future war, however, German manpower will be used by one side or the other. The advantage of accustoming Germans to service in the British Army far outweighs the risk that we should be training soldiers who may one day be used against us.

The main objection to this scheme is that it might lead to protests from those countries which fear the rebirth of a powerful Germany and thereby weaken the unity of the Western bloc. In order to overcome the fears of our Allies, we should stress the obvious advantages of such recruiting. We should also give assurance that in peacetime Germans would only be used in limited numbers as individuals and not as formations. Service would be only in the United Kingdom or in overseas garrisons outside Europe. France, which is actively recruiting Germans for her Foreign Legion, would have little cause for complaint.

The reaction of Russia and her satellites would no doubt be violent. But this should be ignored. Compared with the blockade of Berlin, such recruiting could scarcely be considered a hostile act. There are also good reasons to suppose that the von Paulus army is still in existence. No satisfactory explanation has ever been given as to the discrepancy between the number of German prisoners who fell into Russian hands and the number she is prepared to return.

Terms of Service

In Western Germany, the scheme should be initiated by a carefully prepared publicity campaign giving the terms of service and the obligations of the recruit. Briefly these should be:

1. Engagement for 5 or 6 years outside Germany, of which approximately half would be spent in the United Kingdom and the rest overseas. Re-engagement up to a maximum of 21 years service would be permissible.

2. The same rates of pay, allowances, and pension as the British Regular soldier.

3. Promotion up to and including the rank of warrant officer. The question of promotion to officer rank could be reconsidered after the scheme had been in operation for a few years.

4. Normal leave to Germany while serving in the United Kingdom.

5. Married quarters in the United Kingdom on the same scale as for the British Regular soldier, but only after completing 3 years' service, i.e., after initial training and a tour of overseas service.

6. The recruit would be required to take an oath of allegiance on condition that he would not be used to fight against his own country.

7. After completing his service, the German would still have a reserve liability.

8. He would retain his German nationality but could apply for British citizenship before the end of his service. His acceptance would depend on his character and the quality of his service. This in itself would be a great incentive to recruiting.

The Scheme in Practice

Prospective recruits would apply to the nearest British Military Government Headquarters where they would fill out a form giving such personal details as age and previous service, and hand in a medical certificate from a German doctor. Investigations would be made into their past in order to weed out communist sympathizers, certain categories of ex-Nazis, or those with a criminal record. The rest would be called up for interview and if passed would be directed to selection units in the British Zone.

The number of such units would depend on how many recruits we are prepared to accept. Until the experiment has justified itself, we should set a limit of, say, 6,000 in the first year or a monthly intake of 500. The process of grading recruits according to their fitness for various arms and for specialized training within those arms would take longer than the normal procedure at home. A month instead of a fortnight should be allowed. This would also give time both for the recruit to become accustomed to British methods and to make certain that all undesirables were rejected before leaving Germany.

After passing through the selection unit, the recruit would join the monthly draft for the United Kingdom, where he would be sent to a basic training unit of his particular arm. Thereafter, he would be treated in exactly the same manner as a British Regular soldier, except that his overseas tour of 2½ or 3 years would be spent in the Middle or Far East and not on the Continent. At the end of this time, he would return to Britain, a fully trained and experienced soldier. Being now completely Anglicized, he would be able to play his part in training the

National Serviceman and in assisting the Territorial Army. He should be allowed leave to Germany and, if married, might bring his wife and family to Britain for the remaining period of his service.

On taking his discharge and returning to Germany, he would be still liable for service as a reservist. This would be difficult to enforce, particularly if the man's home were not in the British Zone. We should, however, take steps to retain his loyalty after discharge by seeing that he obtained good employment, possibly working for British Military Government, and that British units in Germany arrange periodic reunions for German reservists.

Reflections on World War II

Translated and digested by the MILITARY REVIEW from an article by Colonel B. E. M. Gerard in "L'Armee-La Nation" (Belgium) November 1948.

UNTIL 1941, Germany and her satellites met with nothing but unprecedented success. They occupied nearly all the nations of Europe except Russia.

Germany had taken the time to develop an entirely new instrument of war, one whose characteristics corresponded exactly with her own doctrines.

The quality of German matériel surpassed that of all her enemies. The latter had emerged from World War I with a relatively large quantity of matériel. It was the matériel of victory. They retained their confidence in it, only improving, perfecting, and adding to it. And thereby we come to an interesting conclusion: that victory belongs to the most modern and the newest army.

This advantage was given to Germany by the Allies of World War I, who disarmed her completely and afterwards gave her the opportunity to rearm in spite of treaty restrictions.

The desire for revenge on the part of those in control in Germany had created an atmosphere favorable to accepting an enormous budget. When confronted with this defiance, the ex-Allies of 1918 failed to act.

The Form of Battle, 1939-1940

The German General Staff, in spite of everything, had never ceased to exist. It continued to seek and study the causes for its defeat in 1918. The Staff concluded that it was necessary to conduct a swift war of movement aimed at the annihilation of the enemy. It recognized that modern weapons of combat—tanks, planes, and motor vehicles—facilitated this form of war.

At the same time, the Allies adhered to the easy solution of considering that its doctrine of 1914-1918 was perfect, since it had achieved victory.

It was particularly emphasized that the Allied front was never broken through because of the way the reserves were handled, and that the situation could always be reestablished.

Out of these considerations, the dogma of the inviolability of the defensive front was born in France. The creation of the Maginot line in 1930 accentuated this tendency.

This false feeling of security also served as a pretext for reducing the length of training of officers and of many large units.

The French Army adapted itself to defensive thinking. A long war was expected. The French no longer counted on any immediate military aid from Great Britain, but they expected to benefit from Britain's mastery of the seas and the blockading of Germany.

The German attack on Poland in 1939

should have opened the eyes of Germany's adversaries. Instead, an effort was made to explain the Polish defeat on the basis of the numerical superiority of the assailants and the unfavorable geographical features of Polish territory.

Then came 10 May 1940, with the surprise attack of German planes, parachute and glider landings, and the crushing attacks of armored divisions. The sea was reached by the Germans on 20 May, and there followed the disasters which are only too well known.

The doctrine of war which the Germans had accepted had no other end than a more complete application of the principles of war. Fast tanks, motorized columns, and large air forces restored flexibility to maneuver, which had been lost during the period of stabilized warfare from 1914 to 1918.

The Importance of Surprise

The German Armies of 1940 exploited the advantages of surprise to the maximum. They achieved:

1. Surprise on D-day, which occurred after several false alerts.

2. Surprise as to the point of main effort, which was directed across the Ardennes against the Meuse.

3. Surprise as to the strength of the forces employed (aviation, tanks, and motor vehicles).

4. Surprise as to the methods of combat employed.

5. Surprise as to the tempo which these forces gave to the battle.

All the advantages conferred by surprise are made at the expense of the defender, because the attacker has the benefit of the initiative.

The speed which is given to operations by modern weapons, resulting in maximum effectiveness in surprise action, constitutes an advantage for the assailant which continues to be accentuated. Speed leaves the defender progressively less time in which to take countermeasures.

This idea is not new. As early as 1936, we stressed such an eventuality, suggesting that victory no longer belonged to the largest battalions but to those which moved most rapidly.

The Determining Role of Aviation

The Germans began the war with an air force which surpassed that of her opponents. Moreover, the *Luftwaffe* attempted to destroy, in surprise attacks, the Allied planes which were still on the ground when their attack began on 10 May.

Next came the employment of German aviation in force to terrorize civilian populations, thus creating a more favorable atmosphere for capitulation. The Germans utilized mass employment of aviation against communications, reserves, and battlefield objectives, and employed paratroops or air-transported troops against the nerve centers of the field of battle. All these actions had a psychological effect which destroyed morale.

German aviation dominated the field of battle and possessed air superiority above it. It soon became obvious that aviation was the indispensable auxiliary of success. The Allies were obliged to drive the *Luftwaffe* from the sky of Africa to gain the victory of El Alamein. The final triumph of the Allies was made possible only by the positive elimination of the *Luftwaffe* from the sky.

Thus, the fact that mastery of the air is a prerequisite condition of victory was confirmed. This fact conditioned the particular form in which the war developed. It was necessary for the Allies to achieve indisputable mastery of the air before carrying out ground and naval operations.

The war drew to a close when Allied aviation was employed in accordance with the following concepts:

1. Strategic aviation was used to attack the economy of the enemy and to protect national territories and the sea and land routes.

2. Tactical aviation, working in close connection with the other armed forces, was used to obtain mastery of the air over the field of battle and to give direct or indirect support to the army.

The theories advanced by General Douhet indeed had been confirmed by the end of the war of 1939-1945. But the fact still remains that only the infantry—either ground or airborne—insures possession of the terrain.

German Methods of Attack

The successes of the Germans from 1939 to 1941 were due to two principal causes:

1. The element of surprise.

2. The superiority of the forces employed.

Furthermore, it is proper to examine the accepted principles of defense in 1940. Continuous defensive positions were created and fortified, and the attempt was to be made to halt the enemy at these positions.

It was idle to imagine that such a system could hold off the terrific force of the German blows, followed by armored breakthroughs. This concept was not unknown to the Allies, but the means available, considering the extended fronts to be defended, were not equal to the effort which the Germans could exert.

Allied tactical methods were soon changed to conform to the new conditions created by the mass employment of armored forces.

Abandoning the effort to maintain continuous fronts against the shock of armored forces, the defender organized closed centers of resistance. Tanks were able to filter through, but even when passed these centers were able to continue action against the German rear.

Obstacles were organized for slowing the armored attacks between the strong points. But this defense of the intervals between centers of resistance served most often as a combat area in which the tanks of the two sides met one another in individual combat. In such cases, victory went to the side that had the most tanks, the best armor, and the most powerful cannon.

Thus, the defender lost the advantage because his antitank forces were not properly located.

This is what General Montgomery corrected in the decisive phase of the battle of El Alamein in 1942. He organized the intervals between the centers of resistance into a wasp's nest of antitank obstacles, into which could be directed the fire of the centers of resistance and the supporting artillery.

Finally, Montgomery used the antitank weapons of his position to fight off the German tanks that ventured between the centers of resistance. Only after the Germans were checked by these means was the counterattack launched.

The *Luftwaffe* having been driven from the African skies, this method achieved victory for the first time.

The General Course of the War

If we consider the war of 1939-1945 from beginning to end, we are able to break it down into three periods:

1. From 1939 to 1941: period of Axis successes.

2. 1942: period of equilibrium.

3. From 1943 to 1945: period of Allied successes.

Examining these periods more closely, we see that 1939 and 1940 were the years of the great German successes, with the *blitzkrieg* being most effective.

In 1941, the Germans lost their best troops and were hard pressed in their efforts in Russia.

In 1942, Allied industries began to get under way effectively and the American forces assumed importance. Collaboration between ground, naval, and air forces was born, and tactical countermeasures saw the light of day. Mastery of the air, which

the Allies had won in Africa, made possible the victory of El Alamein.

Shortly afterward, the tenacity of the defenders of Stalingrad broke the spirit of the Axis forces and the balance swung in favor of the Russians.

El Alamein and Stalingrad were two turning points in the war.

The final period, 1943 to 1945, saw the Allied powers deploy their human and material resources. They regained the areas which had been lost in Europe, Oceania, and Asia. They overthrew the Axis and finally occupied the enemy homelands.

It will be noted, speaking only of the European theater, that Poland was subjugated in 1939 in 18 days. In 1940, Holland was defeated in 4 days, Belgium in 18 days, and France in 42 days.

It will be remembered, on the other hand, that it took until May 1945 to conquer the Axis powers in Europe. It took more than 4 years to reestablish what it had taken only a few weeks or a few days to lose.

Economic Military Potential

In this struggle to the death, the nations fought with all their might, casting into the balance all their scientific, human, economic, industrial, and moral resources.

We begin to realize the decisive importance of the economic and industrial potential of the opposing powers when we think of the vast material means in weapons, ships, planes, matériel, and supplies which were used to maintain their immense armed forces.

One may then imagine the tremendous effort that was required to create these weapons and to place them at the disposal of the fighting forces of the belligerent nations.

By reversing the concept previously stated, we reach this paradoxical position: we no longer know who must exercise the greater effort and skill, the commander in chief of operations or the quartermaster general who is obliged to meet the enormous demands of the operating forces at a given time and place.

The enormous economic and industrial potential at their disposal was certainly one of the factors in the final success of the Allies. But even with this potential, it took them years to adapt it to the requirements of war and then to reach the necessary volume of production.

Armed Forces in Peacetime

The conclusion should not be drawn that the virtual pre-eminence of the economic and industrial factor means that armed forces should be drastically reduced in time of peace. Nor should it be concluded that manpower efforts should be directed principally toward industrial reequipment and scientific research.

What would be the use of great industrial power, geared to the economy of war, if the armed forces of the country were not capable of preventing an enemy from suddenly seizing this wealth and thus creating favorable conditions for his own military efforts?

This postulate is particularly illustrated by World War II. By gaining access to, or control of, all the economic and industrial wealth of Western Europe and the material products of Eastern Europe by 1940-1941, the Axis Powers were able to resist until 1945.

From the purely military point of view, these conquests gave the Axis Powers the great advantage of air and naval bases, which constituted an immediate threat to the territories and communications controlled by the Allies.

In short, these territories invaded by the Axis constituted a safety zone which the Allies had to re-conquer foot by foot at great cost and effort.

Moreover, of what advantage would their economic and industrial superiority have been to the Allies if they had not been able to bring supplies and equipment

across the oceans to the places where they were needed, under the protection of their naval and air forces? Such forces cannot be improvised.

The armed forces of a nation must be such that they will be capable of insuring continuity of military policy and of opposing the invasions of an enemy into its national territory. Quantitatively, the means required for this depend on the general geographic and economic conditions, on the strength of the military forces of possible opponents, and on the quantities of military supplies which a state is expected to furnish its allies in opposing the forces of a common enemy.

Employment of New Weapons

When one of the belligerents has perfected a new weapon and utilizes surprise in its employment, he obtains maximum effect from the weapon.

An adversary, caught off guard and without immediate defense, suffers from the full effects of the weapon. If the weapon possesses real value, the victim is in danger of suffering harm which may cause him to lay down his arms. The weapon may create conditions which will materially modify the course of the war.

Germany, with her back to the wall, had pinned her hopes on the employment of V-weapons. She even sacrificed construction of planes in the interest of these weapons.

This was a case of "letting go the prey and grabbing at its shadow." The V-weapons, although causing damage in London, Antwerp, and Liege, were imperfect and ineffective from the military standpoint.

The Atomic Weapon

The use of the atomic bomb at Hiroshima marked the final phase of the war.

The birth of the atomic bomb marks a revolution in warfare. Dropped by surprise at Nagasaki and Hiroshima, it had the advantage of maximum effect, due to the flimsy construction in those cities.

Since then, numerous articles have described the capabilities of this weapon. Its effectiveness is so great that we may hope that fear of reprisal will cause belligerents to renounce its employment. This was the case as regards poison gas after World War I.

Defenses against the atomic bomb, however, are beginning to appear. First would be immediate retaliation. Others would be great dispersion of military forces and production centers; modifications in living habits and dispersing large centers of population; and the construction of shelters for key industries which are proof against the effects of the bomb.

It has also been stated that the awful effects produced by the atomic bomb eliminate both strategy and tactics and that the necessity for armed forces is now questionable.

My personal opinion is that the atomic bomb broadens strategy rather than eliminates it, and that military leaders must conceive their strategy on an even greater scale. Strategic thought must now be expanded to include not only national territory but also continental and global spaces.

Tactically, the proximity of the enemy will serve as a safeguard. Two belligerents being at grips, it will be impossible to destroy the elements of the one without at the same time annihilating the forces of the other.

The Weapon of Resistance

Resistance is not new. It has always appeared on a large scale when the occupier held territories which were excessively large or very heavily populated and when the occupier was incapable of effective control.

The radio and the airplane have enabled resistance forces to receive precise directives with regard to their action and the

means necessary for putting this action into effect.

The effects of resistance movements have been enormous, and the difficulties they have created for the enemy have been serious. General Montgomery has declared that the closer the Allied forces approached German territory, the slower the advance became because of the absence of resistance forces.

From the psychological point of view, the action of resistance forces has been considerable. It saps the morale of the enemy by creating a feeling of insecurity.

In the form which they assumed, resistance forces were frequently contrary to the laws of war and caused bloody reprisals by the enemy.

It would be useless, however, to attempt to prevent the birth and development of resistant forces. They are an effective weapon, easily handled and supplied by the high command. They respond to the desires for action of the people who are under the yoke of an invader. Their action is well adapted to the life-or-death form of present-day, total conflict.

There should, however, be legislation on this subject to insure minimum guarantees to the persons in an occupied land.

The laws of war should be revised to provide a status for resistance forces and to take into account the new form that warfare has assumed in respect to acts of war committed at a distance from the normal zone of contact.

The Total Character of War

A study of World War II shows that war has become total and general, not only with respect to the persons and means which are brought intc action but also with respect to the extension of the spaces over which it may be waged.

Everything, it appears, should be placed at the disposal of the fighting forces in a struggle to the death. The fact is that war, no longer a paying matter, has ceased to be a conflict dictated by interests and has become an ideological conflict in which one side attempts to impose his moral leadership, his ideas, and his civilization on the other. It was because of this that World War II was not terminated except on the basis of annihilation or unconditional surrender.

In a conflict where the physical existence of peoples and their right to think as they wish are at stake, it is natural that the parties should draw on all their resources and get the most out of these resources.

War requires intensive, complete, and harmonious collaboration between all the material and spiritual forces of the group of nations at war. Their activity must be directed exclusively toward the war effort. This type of collaboration cannot be improvised. It can be achieved only by painstaking preparations in time of peace in individual states and groups of nations.

Military collaboration, industrial and economic agreements, and scientific and cultural interdependence, are factors which make for harmony and success.

Continuous Evolution of War

The forms of war change to conform to normal progress and successive discoveries.

Normally, those who initiate operations attempt to surprise their adversaries. Surprise is sought not only in time and space but in the use of new weapons and new forms or methods of combat.

Care must be taken, therefore, not to study the last war as a pattern to be followed in preparing for the next one. The last conflict should be considered only as the base from which we may gain some idea of the forms and tempo of future warfare.

I can do no better, with respect to this subject, than to repeat the words which ended my course in Military History to the students of the *Ecole de Guerre* in 1939:

"In time of war, an unexpected innovation, or one which has remained secret in time of peace . . . sometimes appears suddenly and by surprise, leaving the adversary confused and without defense. These circumstances, though they be only momentary, are always advantageous to the side that introduces the innovation.

"No one expected 420-mm guns in 1914, nor the poison gases of 1915, nor the tanks of 1917. Such situations will certainly occur again in the future. One must, therefore, be ready for them, prepare his mind for encountering them, and always leave a place for the unforeseeable in his forecast."

These words still retain their earlier significance.

To the Roof of the World: Spitsbergen

Reprinted by the MILITARY REVIEW from "The Canadian Army 1939-1945" * by Colonel C. P. Stacey (Canada) 1948.

THE year 1941 brought the Canadians in Britain one piece of active employment. In August and September, a small Canadian-British-Norwegian force commanded by Brigadier A. E. Potts, 2nd Canadian Infantry Brigade, carried out an expedition to the Arctic archipelago of Spitsbergen, which lies some 600 miles from the North Pole.

With the involvement of Russia in the war, these distant islands (which are Norwegian territory) had suddenly assumed a new importance. Spitsbergen had valuable coal mines which it was desirable to deny to Germany. The archipelago also constituted a potential threat to the convoy route between Britain and north Russia. The possibility of an expedition was first discussed late in July 1941, when Sir John Dill (chief of the Imperial General Staff) offered the operation to General A. G. L. McNaughton (Canadian Corps Commander) and the latter accepted it.

At this time, the proposal was that Spitsbergen should be occupied by a military force adequate to the protection of a naval anchorage and refuelling base which it was planned to establish there. It was intended to withdraw the force at the end of 4 months, prior to the winter freeze-up.

The plan was to send an infantry brigade less one battalion, with attached units. Headquarters 2nd Infantry Brigade, with Princess Patricia's Canadian Light Infantry and the Edmonton Regiment, plus a field company of engineers, were designated for the task. Later, a field battery was added. This force moved early in August from Sussex to Glasgow, and thence to the Combined Training Center, Inveraray, where it did some amphibious training. Further discussions in London, however, led to doubts concerning the utility of the expedition as planned, and on 16 August a meeting of the Chiefs of Staff Committee, which General McNaughton attended, decided to carry out a much more limited scheme. The new plan was merely the temporary landing of a force which would destroy or remove the mining facilities and the radio and meteorological stations. The force was also to repatriate the considerable Russian community in the islands to Archangel and to remove all Norwegians to the United Kingdom.

In consequence, the force was greatly reduced. "Force 111," as it was called, was now to consist of a skeleton brigade headquarters with signal section, the 3rd Field Company Royal Canadian Engineers, a company of the Edmonton Regiment, a

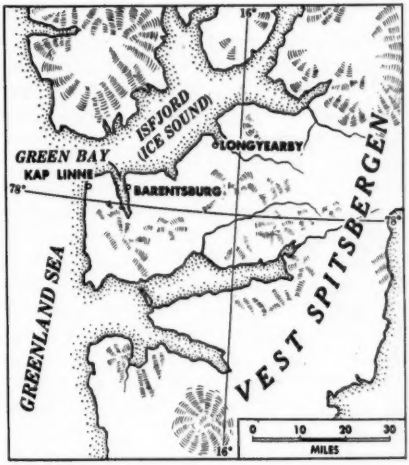
* King's Printer, Ottawa, Canada. Copyright 1948, price $2.50.

detachment of machine-gunners of the Saskatoon Light Infantry, and medical and finance detachments. In addition, a British engineer detachment and other British specialists were included, as was also a Norwegian infantry party of 25 men and officers. The total strength of the military force which went to Spitsbergen was 46 officers and 599 other ranks, of whom 29 officers and 498 other ranks were Canadians.

This force could be carried on one transport, which could also find room for the entire civilian population of Spitsbergen. Those selected for the expedition sailed from the Clyde in the *Empress of Canada* on 19 August. That evening, the transport made contact with Force "A," the naval squadron which was to escort her on her unique mission. It was commanded by Rear Admiral P. L. Vian and consisted of the cruisers *Nigeria* and *Aurora* and the destroyers *Anthony, Antelope, and Icarus*. On 21 August, the squadron reached Iceland, and here Brigadier Potts conferred with Admiral Vian and final plans were made. The ships sailed again that evening. Next day, the soldiers were told their destination for the first time.

On the morning of 25 August, the squadron was close to westward of Spitsbergen. An aircraft from *Nigeria* reconnoitered the Isfjord (Ice Sound), the great inlet, leading into the island of Vest Spitsbergen, on which the most important settlements lay. No enemy activity being discovered, the squadron closed in, and at 0430 a small party of signallers and Norwegians landed from *Icarus* at the radio station at Kap Linne at the mouth of the inlet. They were cordially received by the Norwegian staff. The heavier ships now entered the Isfjord and steamed on into Green Bay, on which lay the Russian mining village of Barentsburg. Brigadier Potts went ashore to discuss the proposed evacuation with the Russian authorities, while military parties occupied the other Russian and Norwegian settlements along the Isfjord.

The first great task was the removal of the Russian inhabitants to Archangel. During 26 August, the whole Russian population (some 2,000) was embarked in the *Empress of Canada*, and that night the ship sailed for Archangel escorted by *Nigeria* and the three destroyers. *Aurora* remained at Spitsbergen to protect the expedition and assist in the liquidation of the more remote settlements, which was carried out during the next few days.



During the absence of the *Empress*, extensive demolitions were undertaken at Spitsbergen. The great dumps of free coal at the mines were set on fire (it is estimated that 450,000 tons were thus destroyed). Mining machinery at Barentsburg, Longyearby, and other settlements was disabled or removed. Great stores of fuel oil were poured into the sea or burned.

On the evening of 1 September, the *Empress of Canada* and her escort again dropped anchor in Green Bay, having

successfully completed their mission to the White Sea. During 2 September, all the 800 or so Norwegians in Spitsbergen were embarked. Just before midnight on the night of 3-4 September, the force sailed again for the United Kingdom, leaving the islands void of humanity. Along the shores of the Isfjord, the fires in the coal piles still blazed brightly. The whole occupation had lasted 10 days, less 5 or 6 hours. The Canadians had found it hard to keep track of time, for owing to the midnight sun it was never wholly dark and throughout the period the men worked hard in shifts, 4 hours on duty, 4 hours off.

A task of special value had been performed by the Signals detachment of the force with the aid of the Norwegian staffs of the islands' two radio stations. These were both in touch with the German-controlled station at Tromso in Norway, and had been in the habit of sending out meteorological data. Due to the loyal cooperation of the Norwegians, it was possible to continue normal transmissions and conceal from the enemy the fact that anything unusual was going on in Spitsbergen. The data sent out, however, was in some respects mendacious. To discourage enemy air reconnaissance, fog conditions were reported from the arrival of the expedition until the departure of the *Empress* for Archangel. The same procedure was followed after her return until the final departure of the force. The last transmission went out at 2000 on 3 September, after which the stations were put out of action. The deception appears to have been complete. When the force was well out to sea on its homeward voyage, Tromso was heard calling Spitsbergen and inquiring urgently why it did not answer.

On 6 September, the cruisers *Aurora* and *Nigeria* parted company with the *Empress*, bound for an enterprise against enemy naval forces in Norwegian waters. The military force had an uneventful return voyage to Britain. The *Empress of Canada* re-entered the Clyde on the night of 7-8 September. The next day, the Canadians were on their way back to the stations in Sussex from which they had been absent for more than a month. The expedition had successfully achieved all its modest objects. It had had no contact with the enemy, and had not lost a man from any cause. Far from interfering with the undertaking, the Germans had not even succeeded in discovering that it was in progress. In spite of the absence of action, it had been an adventurous enterprise. Never before had a military force advanced so close to the North Pole.

Aggression must be met with unequivocal, clear determination. The success of each aggressive step, uncurbed, serves only to encourage further aggression. Only if we act at once and with firm and resolute purpose can such aggression be contained.

Major General Alden H. Waitt

Infantry Tactics

Digested by the MILITARY REVIEW from an article by Major General C. H. Boucher in "The Army Quarterly" (Great Britain) July 1948.

MINOR tactics consist of the employment in battle of one arm alone. They involve the use to the best purpose of the weapons with which that arm is provided. The object of this article is to consider the minor tactics of infantry.

Major tactics are the business of army, corps, division, brigade, battalion, and even company commanders in selecting the objectives of the next lower formation, assessing the forces needed for the capture of that objective, and providing those forces. Minor tactics are the technical business of the fighting of each unit and sub-unit of each arm.

The Approach to Tactics

Half of our troubles with tactical problems disappear when approached in the right way. Failure to understand how to begin to tackle a problem is much the biggest cause of all the bad tactics that one sees today and saw during the German wars and the period between them. If, in search of the solution of a tactical problem, you take the road marked Manuals, you will soon find yourself sliding rapidly and easily down a slippery slope strewn with paper, slogans, and catch-words, and leading straight to perdition. If, on the other hand, you should turn in the other direction, up the road marked Original Thought, you may find the path difficult at first, but you will be at least half-way to success in your search. You will be on the right road. The manual approach to a tactical problem is fatal and it is endemic in our Army. Until we can get rid of it, our minor tactics will remain in the deplorable state in which they have been for the last half century. Warfare is becoming more and more mobile and quick moving, and in order to keep pace with it our tactics must forget all about drills and regulations and become fluid and open-minded. Tactical manuals tend to be out of date as soon as published. Their danger does not lie so much in this as in the refuge they provide for the lazy brain and the tendency inherent in them to approach a tactical problem from the standpoint of regulations. No two situations in war are ever identical, and it is vital to good battle leadership to insist on a completely open-minded approach to each tactical problem.

The correct method of approach to a tactical problem is much the same as is taught for an appreciation. First, what do I want to achieve? What is my object? In the case of a section, the lowest tactical unit, it may be only to move from A to B, but the sequence will hold right up the scale. Second, what are the conditions of the problem? These vary with every problem, but some of the following will usually require consideration: the enemy, ground, weather, resources in men and material, outside help. Third, after considering the conditions, what are the possible ways of achieving my object? Finally, selection of the best of them and hence the plan of action.

National Characteristics

In a leading article in *The Times* of 10 November 1947, it was written: "It is plain that in war and peace alike, the way to efficient performance is partly through studying the personalities and character of men and women and partly through adapting their machines and conditions of work to suit them. The three services set up special committees to gather this knowledge and apply it in action, and the effects on the course of the war were far reaching." Modern war is a national effort involving everyone, and infantry tactics

are therefore a matter of national importance. If the best results are to be obtained, they must be based on national characteristics.

It is the ability to assess aright the characteristics of their men and to formulate a tactical doctrine to suit them that has proved one of the greatest factors in the success of the past masters of war. The coat must be cut in accordance with the cloth and the "moral is to the physical as three is to one." Human and national characteristics change little through the centuries. Therefore, a study of the characteristics of the British in past wars and of the tactics based on them by the great commanders of the past is likely to be of value for the present and the future.

What, then, are the national characteristics of the British, on which infantry tactics should be based? I suggest they are, first, lack of imagination, involving absolute faith in ultimate victory, refusal to contemplate even the possibility of defeat, and with it the tradition of success and the confidence in their leaders born of it. Second, determination, even obstinacy, producing toughness and the ability to take punishment. Third, an innate sense of justice and fair play. Fourth, a great love of sport. And, last, a marked if often dour sense of humor. It is the first two of these characteristics that are of particular value tactically.

Let us now look at history. Only in two of the great periods of British arms has the infantry been the predominant partner on the battlefield. These were in the French wars, of Edward III and his successors, from Crecy to Agincourt, and in Wellington's campaigns on the Continent.

More recently, Lord Montgomery's great battle of El Alamein, from which he has taken his title, followed a very similar pattern.

The standards achieved in the last war by the nation as a whole are happily still with us and require only proper training to bring them out in their full battle-winning vigor. Our infantry tactics must therefore still be based on the tactics of our great ancestors and on an unchanged national character.

Infantry Tactics

The role of the infantry in battle is to close with the enemy and destroy him. Let this never be forgotten. It is the key to all infantry tactics. It is the commander's business so to arrange his battle that the infantry are put into a position from which they can carry out their task. Their task is the assault. War is usually waged either offensively or defensively, but in both these phases the role of the infantry in battle is the same, to close with the enemy. In attack, this may be achieved under cover of obscurity, real or artificial, or of broken ground, of woods or jungles, or, and possibly in addition to any of these, by the aid of supporting fire from other arms. When this is provided by tanks, the obligation of protecting those tanks from the close-range fire of enemy antitank weapons is a factor in the combined plan. In defense, the enemy will bring himself to the place of execution, the killing ground, and this must be carefully chosen to secure the best results and the infantry must be placed accordingly.

The principles on which infantry tactics must be based are offensive action, surprise, and mobility. These are the test of any infantry plan. If the plan is to work, they must all be present. Thus, any plan that provides for concrete or similar protection for infantry is basically rotten and foredoomed to go the way of the Maginot Line. Far worse, such plans show that the doctrine of war of those who make them is unsound. Millions of dollars were spent on concrete defenses in the last war. Most of these defenses happily never had to be manned but had they been required they were foredoomed.

It must be realized that if fire is re-

quired its production is not the job of the infantry. It is the job of the other arms, particularly of the artillery and the machine-gun battalions. The infantry is not provided with a support company for the purpose of holding ground but to assist it in closing with the enemy, whether in attack or defense.

Armament and Organization

In this matter, it is again essential to follow a correct logical sequence, which is: (1) tactical doctrine; (2) armament required to implement that doctrine; (3) personnel required to man that armament, i.e., organization. The General Staff must first state clearly what infantry is required to do in battle. Then the best possible weapons for the purpose must be produced. Finally, the organization necessary for the use of those weapons must be decided. This sequence has not always been followed in the past and the tendency is to accept an existing weapon, to organize on this weapon, and finally, to allow tactics to be dictated by the weapon and its crew. This sequence of armament, organization, and tactics may be economical, but it is reactionary and fatal to tactical progress.

As an example of the above, the rifle with which we have been armed for the last 50 years is a typical case. Unsuitable in the South African war, it was positively obsolete in World War I, where only at the outset and in the hands of a few highly trained experts could it begin to cope with the enemy automatics. At the beginning of World War II, it proved a very inferior type of tin opener against armor and quite inadequate against the infantry accompanying it. Yet it is still with us, though perhaps thinly disguised. *

Infantry tactics have been discussed above. They are founded on the three principles: offensive action, surprise, and mobility. This amounts to the ability to assault under all conditions. To fulfill these principles, assault troops must be able to produce a burst of rapid fire at close range, i.e., up to 200 yards, and they must be lightly equipped, carrying with them the absolute minimum for the fulfillment of their purpose. Every assault trooper therefore requires a light weapon capable of firing a short burst of fire with a fixed battle sight up to about 200 yards. He further needs a couple of grenades and a close-quarter weapon additional to his fire arm.

This weapon should suit his national characteristics. As an example, the Gurkha should carry a *kukri* and the Scot might prefer a dirk. Pistols are useless in war. For the Englishman, I have seen nothing better than the type of axe carried for emergency use by all aircraft of Transport Command of the RAF. That is all. Everything else should come up later by armored carrier. Light machine guns are not required in assault sections. They should be held by the platoon commander, along with 2-inch mortars, on a scale of one per assault section. That dangerous catchphrase, "fire and movement," thus assumes its correct significance. Fire is no business of assault troops until they get to close quarters. It is fatal to give them a long-range weapon—it merely gives them wrong ideas. Similarly, the term "rifle company" should be abolished and "assault company" substituted.

Considering the organization required for this set-up behind platoon headquarters, the principles to follow are simplicity and flexibility, and the present infantry battalion is lacking in both. It is encumbered with far too many weapons, with too many roles. As regards flexibility, it cannot throw off a self-contained sub-unit to form part of a rapidly formed battle group, such as the Germans were

* In a postscript, the author reports that the Director of Infantry now accepts, as the "ideal rifle for the infantry," a weapon combining the functions of the rifle and the machine carbine.

so adept at doing in the last war. I think the present infantry battalion should be simplified, and I am doubtful if a support company should be included in it. Every operation includes a battalion fire plan and the coordination of all supporting fire will take place at battalion headquarters or higher. I would rather that all mortars and machine guns heavier than assault weapons should be organized in other units than the infantry battalion, which should be restricted to the assault role. The division machine gun battalions in Italy, which consisted of 4.2-in. mortars and machine guns, were allotted normally on a basis of a company to a brigade, and this worked admirably. These weapons are essential in order to free infantry for their proper role, and their organization in a special support unit conforms with the principle of simplicity and gives the infantry a single, instead of a dual, role. These battalions may be classed either as infantry or gunners. If considered to be infantry, then they should be called support battalions and the others, assault battalions.

Finally, we come to the need for some unit to act as forward troops or outposts: in defense, to break up the enemy's attack before it reaches the main position; in attack, to go forward as soon as the objective is taken and fulfill the same purpose against the inevitable counterattack. It should also carry out all patrolling and all sniping and intelligence observation, and be responsible for the defense of battalion headquarters. The best organization for this purpose is probably a light company in the battalion.

The Study of Ground

Much lip-service is paid, and rightly so, to this most important matter, but normally it ends there. The first thing to do, as always, is to consider your object. In attack, it may be the capture of some feature which is vital to the enemy's position. In defense, it may be simply to prevent enemy infiltration in a certain area where he is not wanted. This object must be commensurate with the resources available to you or you must ask for more. Having chosen the battlefield, or it having been chosen for you, the key to the further study of ground lies in the knowledge of the characteristics of the various arms and their weapons. The battlefield must now be analyzed and divided into ground best suited to tank, infantry, machine gun, artillery, or mortar action. The battlefield is now taking shape. The next step is to decide, in view of your object and the sort of ground you find, what arm you will rely on mainly for the achievement of that object. If, for instance, the ground is mainly open and devoid of covered approach and your role is defensive, the predominant arm might be the antitank gun and machine gun. Thus, you will study the ground mainly with the eye of the machine and antitank gunner. The two go naturally together, because tanks are normally accompanied by infantry. Your infantry and tanks, the assault troops, will be withdrawn and hidden behind the position in a counter-attack role. The field artillery and light companies will reach out as far as possible to give warning of and disrupt the enemy's approach. The engineers will confine the enemy advance by mine fields to the places where the machine and antitank gunners will have the best targets.

If, on the other hand, the role is attack, the choice of the predominant arm is narrowed to tanks or infantry. If the infantry is selected, it must be determined whether there is enough cover to permit a daylight attack with all its advantages of support by the air force, by armor, and by observation. If the attack must be made under the cover of obscurity, it must be determined whether it shall be real or artificial, and whether the support, in the initial stages at any rate, will come from

artillery alone. This much is the decision of the commander of the force of all arms. It is a matter of major tactics and a decision having been made, the way is cleared for detailed reconnaissance to decide the minor tactics of each arm. As far as infantry minor tactics are concerned, the procedure is just the same as described above, only there is less choice of ground. Your objective will be given you and so will an area of ground. It is for you to adapt your tactics so as to make the best use of that ground while achieving that objective. It is usually possible to proceed in a good many ways, but there will always be only one best way that will make the best use of the ground.

Conclusion

The only way to tactical efficiency is to get out on the ground with representatives of all arms and of the air force and to discuss actual problems there. In doing this, it must always be remembered that there may be several possible solutions to any problem but there is only one best solution.

Continued study of the ground and practice in its adaptation to one's purpose is the key to tactical efficiency.

The Strategic Air Coup

Translated and digested by the MILITARY REVIEW from an article by Major General Henry Peyron in "Ny Militär Tidskrift" (Sweden) No. 8-9, 1948.

A STRATEGIC coup is a surprise military operation. The less prepared a country is when attacked, the greater the effects of the coup. To neglect preparation during a period of political tension is to invite a strategic coup. It is questionable whether the average person is aware of the serious consequences that could follow such a strategic attack. The following thoughts relative to a possible interval between the execution of a strategic coup and the beginning of a war have reference, principally, to an air coup.

Let us assume that we have neglected preparations, that barracks and cantonements contain either untrained personnel or stand empty except for officers and a small number of students in schools, and that no special defense forces are organized. Air units are organized, to be sure, but they are engaged in exercises and training and are not on a war footing.

Nature of the Attack

Since the attack will be a surprise, preparation for the attack must be kept highly secret. The aggressor cannot reveal his purpose because that would allow time for the adoption of countermeasures. Our nearest neighbors are small, independent states whose people we need not fear. If, however, preparation for an attack were made by a great power in the vicinity of one or more of these neighboring countries, the first move of the great power would be the occupation of one or more of these small countries. This move would reveal the aggressor's intentions, since an occupation could not be carried out unnoticed and the possibilities of a surprise attack would be reduced or eliminated. In order to effect as great a surprise as possible, therefore, the great power in question must make its first preparations for attack in an area more inaccessible to our intelligence service. This is possible if the great power attacks from bases back of an iron curtain.

The most critical situation for us would be that in which the enemy air force reached our country without our having advance knowledge that an attack on us

was being prepared, or in which we should learn of the attack only when the enemy air force was on its way. Information as belated as this would be of little practical use, as the attack would reach us quickly, perhaps within an hour.

Strategic air coups are probable, under all conditions. In attacks on small nations, they will probably be directed against the objective in such a way that the possibilities for continued resistance would be unlikely. No great imagination is required to see such a situation. The attack would be directed against military centers, mobilization and equipment centers, naval stations, air bases, vulnerable points on the railroads, power plants, important war industries, and similar installations. The air coup would probably be coordinated with sabotage by fifth column forces.

Air-landing operations will occur in connection with the air attack. It should be anticipated that an adversary may attempt to carry out an invasion using only air-landed forces. Maintenance of these forces can prove difficult, but in consequence of the direct and indirect effects of the air coup, it will probably be possible for the aggressor to overcome this difficulty with relative ease. The air-landed forces will attempt to establish bridgeheads in the vicinity of the frontier and coast for the purpose of subsequent collaboration with other combat forces, as well as in the interior of the country for the purpose of independent activity against various vital objects.

Countermeasures

In such a situation, we must be in a position to quickly put countermeasures into operation, preferably measures of the "push-button" type. Every hour, every minute, may be precious. But we need power as well as speed. Especially, we should have fighter formations which could intervene while the enemy was still in the air, and afterwards attack his supply transport. In addition to antiaircraft defense, strong and effective land combat forces are required to quickly counter the enemy's well-conditioned, well-equipped, air-landed forces before they are able to increase their strength. How may this requirement be met under the assumption that we have neglected our preparedness?

Even though it be possible to rapidly mobilize the air forces, they cannot develop their entire strength against a surprise coup. Certain formations can be engaged immediately, but they are not enough. It takes time before line troops can be assembled, organized, and equipped.

Also to be noted is the retarding effect of the enemy attack, and the fact that it would make countermeasures more difficult. Before the troops are ready for counterattack, much will have happened which could have been prevented if the troops had intervened sooner. Home guard forces possess the quality of readiness for action to a high degree. They are able at any time to intervene directly against minor air-landings, but generally they are committed to operate locally and as a rule they are not suited for powerful action against air-landed forces. Rapid organization of army formations is, therefore, not possible when they are initially unprepared. Just how much the organization of a home guard contributes toward preparedness cannot be fully evaluated at the present time.

If an air attack comes unexpectedly, we will be obliged to improvise and operate with inadequate resources. This would hardly check the enemy to any degree. The situation will be the same if the attack reaches us only a short while after we have received warning. The longer the delay, the more time we shall have to get ready. But the likelihood of any delay on the part of the enemy is small. What will be the consequences? The enemy's attack

cannot be effectively met in the air. Air-landings not countered in the early phase will proceed uninterruptedly, even though later waves are attacked by our fighter aviation. The air-landed forces will grow in numbers and fire power. Their positions will be consolidated to form extremely dangerous concentrations of forces, which may have a decisive influence on the conduct of our operations. Defense plans will not merely be upset, but they will become impossible to place into effect. The mobilization of combat forces in the attack areas will perhaps be hampered and delayed, if not impossible. Railway transportation may be blocked or completely paralyzed; highway transportation will be hindered by wrecked bridges. In addition, all these disruptions will have a direct influence on the national life. The psychological consequences must not be underestimated. Without question, there will be cool individuals who will seek to check and neutralize the effects of the attack. But the execution of their orders can be influenced by the critical situation.

Actions After the Attack

Let us now turn our attention to the course of events after the air coup has occurred.

Enemy aviation continues its activity. Enemy naval forces and naval landing forces which have started from their secret bases at the same time as the air forces will advance toward the Swedish coast. When the movement of these enemy forces takes a relatively long time, perhaps a few hours, it is possible that our attack formations will be able to interfere with the landing operations and delay them to some degree. It may be assumed in such a situation that neither our naval forces nor our coast artillery are organized for effective action against strong forces, even though they may be better prepared than the Army. What resistance can be offered against an enemy that has succeeded in making a landing? We may assume that the mobilization which has been ordered proceeds under extremely adverse conditions, and that losses of personnel and matériel have resulted from enemy air attacks. The gradually-organized troops will likely be engaged with enemy airborne forces. The resistance against an enemy that has made a landing will likely be fairly weak, and the opposition which could be brought to bear to prevent his joining with the airborne forces would be negligible.

As soon as the great power under discussion launches its air attack, its naval forces will occupy certain adjoining territory in order to attack our frontiers with ground forces as quickly as possible. We may count on this attack beginning after only a day or two. The enemy will realize that we have had a short time to recover, and that we have had time to alert certain forces and to take some countermeasures. His attack of our frontiers cannot be a surprise attack. In order to crush any eventual resistance swiftly, the enemy attacks on our frontiers would be conducted from the outset in considerable force and with strong air support. Just how much resistance could be offered the advancing enemy is an open question.

A successful air coup would give the adversary enormous advantages. It could be the key to a successful campaign. Even its direct results can be disastrous. Its indirect results would cause our defense to be handicapped in all respects. The influence produced by the air-landings will, perhaps, be the most dominant.

We should also bear in mind that in a situation which is confused and precarious from the beginning there would be problems so difficult to solve that another power which would normally wish to support us would withhold its intended support.

Guarding Against a Coup

What, therefore, ought to be done to insure preparedness for an air coup and to deal successfully with air-landed forces?

Let us recall the alternative types of enemy attack mentioned at the beginning of this article: the critical situation in which the attack comes unexpectedly, and the more favorable one in which we have received warning.

In order to be able to take action immediately against a wholly unexpected attack, formations are needed which are ready for instantaneous action. In this case, as soon as the political situation becomes strained and we are unable to count on advance warning, defense organizations should be organized and readied for action. A high degree of preparedness such as this will, it is true, be trying, but it may be necessary under certain circumstances.

If, however, one is able to count on advance warning, and therefore on a certain amount of time, the situation is somewhat different. With time at one's disposal, it should be possible to organize and prepare combat forces for action quickly. But this can be done only to the extent that the nation's conscripted forces are suitably organized and trained for that purpose, or other previous measures taken. If the conscripts' first period of training is lengthened so that there would be available an entire year's class of trained, battle-fit troops throughout the year, it should be possible to organize relatively strong and effective formations. The thought of such a long period of service is distasteful to many people at the present time. Because two yearly classes would have to be in the service at the same time for a large part of the year, further difficulties arise relative to command, resources, and barracks space.

In view of these difficulties, we come to the following conclusion. If the length of the service period cannot be extended beyond certain bounds, and if it be admitted that due regard should be given to training, housing, and similar factors, then in case of a strained political situation during periods of the year when battle-fit personnel in sufficient strength is not available, other security measures ought to be taken in the form of separate combat formations. Whether these should be ready for immediate action, or ready only for very rapid assembly, may depend on circumstances. In addition, the strong formations of the air arm, which is relatively untouched by the conditions affecting the conscripted forces, must be ready for action.

We have found that a sound military system is necessary in time of peace if we are to remain at peace.

President Harry S. Truman

4-1397

Strategic Intelligence

Translated and digested by the MILITARY REVIEW from an article by Major Esteulle and Captain R. Goussault in "Informations Militaries" (France) 10-25 August 1948.

ACCORDING to the traditional concept, every strategic or tactical decision results from a study of four factors: the mission or objectives, the terrain, the means, and the enemy. The recent conflict showed that, even assuming this concept to be correct in the tactical echelons, it is faulty in the higher strategic echelons dealing with the conduct of war, in the direction of operations, and in the theater of operations.

Due to the variety of modern means of waging war, such as combined operations, strategic bombing, economic blockade, submarine warfare, and psychological warfare, the high command is now able to choose between several possible combinations.

Likewise, the great distances over which modern war is fought and the improved means of transportation permit each belligerent either to choose or reject one or more theaters of operation.

The elements of means and terrain are determined by a previous decision based on the two other elements, the objective and knowledge of the enemy.

The objective is determined by the general policy of the government. As long as a nation's policy does not vary, the objective likewise remains invariable and may be summed up in the word victory. One conclusion becomes obvious; in the highest echelons, knowledge of the enemy determines the decision.

It may happen that the dominant interests of a nation will require ending a war before victory has been attained, or there may be even a reversal of alliances. As regards World War II, certain American authors do not hesitate to ask whether, at a given moment, the best interests of the western democracies did not demand a halt to the annihilation of Germany. As a matter of fact, the heads of the Anglo-Saxon governments were unable to make such a decision; it would have been contrary to the public opinion of their peoples, and a reversal of the declaration of Casablanca (unconditional surrender). On the other hand, during the meetings held by the "Big Three," the Anglo-Saxons were constantly haunted by the fear of seeing their Soviet partner stop the war or even change camps. They were obliged to make a certain number of concessions to Stalin, who had the means at his disposal for influencing public opinion in his own country.

This shows that the high echelons in charge of conducting a war must be informed as to one's allies as well as the enemy. In certain cases, information received may provoke the gravest decisions, such as a separate peace.

Thus, in the final analysis, the three other factors which enter into a strategic decision—objective, terrain, and means—depend on intelligence.

One other classical concept also must be modified. This is that security depends on disposition of forces and intelligence.

It is no longer true that one can limit himself to the disposition of the armed forces, for the generalized use of armored and air-landed units, and the increased range of guns and radius of action of units, have made the efficiency of all prior dispositions illusory. Dispositions must now be made on the basis of intelligence, which consequently becomes the basic element of security.

If we now extend the concept of disposition so as to include everything capable of intervening in modern conflict—eco-

nomic power, scientific development, human potential—we see that this complex ensemble consists of very few variables for the high command to manipulate.

Some of the important economic elements cannot be changed, such as agricultural and mining areas, dams, canals, and ports. Others, such as industrial installations, can be moved if sufficient time is available, but their positions are fixed on D-day.

Scientific development depends not only on the means employed, the scientists, and the laboratories, but also on the emphasis given to research. It is here, perhaps, that time intervenes most seriously, for a bad initial calculation brings about considerable loss of time.

As for the human potential, it is connected geographically with vulnerable zones, which essentially are inhabited localities. It also has a psychological aspect, for it can be undermined from within by means of veiled propaganda against which one cannot act without intelligence.

Thus, any modification of the economic, demographic, or scientific disposition requires considerable time. The only way to avoid surprise is to be informed.

In short, intelligence has become the determining factor in modern war.

Importance of Intelligence

Intelligence is no less important in peacetime than in time of war. In both instances, it is the principal element of security and decision.

As long as international cooperation is not well organized, national defense is necessary in time of peace. This is true even in the case of peaceful peoples who "find it their duty to love their liberty to the point of desiring to defend it." The aim of national defense should be to guarantee the security of the nation and the integrity of its territory.

How can we fulfill this mission today? Let us immediately put aside the idea of seeking security by means of a one-sided domination of the world, which necessarily limits us to a policy that is essentially defensive. How are we to guarantee our own security with such a policy if all our neighbors were not imbued with like sentiments? Can we trust a purely defensive policy? Territorial protection, with or without permanent fortifications, is now useless in the face of the widespread employment of air forces. Aerial protection is scarcely more efficient, for with the threat of an atomic bombardment one would have to be certain of stopping all enemy aircraft, which is an impossible task. How will we protect ourselves tomorrow from radioactive clouds, germs craftily scattered by enemy agents, or specially infected insects? We must reject the defensive concept. As General Eisenhower has said, our task consists in convincing every eventual aggressor that he cannot wage war against us except at the risk of his own destruction. In case of a conflict, the tactical offensive is the most effective form of strategic defense.

In order that reprisals may be taken, it is necessary that a government be able to make its own decisions. In view of the devastating initial action that has characterized recent conflicts, it may be imagined that any future war will break out without the usual period of tension, with the assailant attempting to effect maximum surprise. If such an aggressor succeeded initially, he could easily win a rapid and decisive victory at relatively slight cost.

Although it is possible that action may be unleashed suddenly in a "push-button" war, it is likely that its preparation will require considerable time. Such preparation will become known to a well organized intelligence service. There is little chance, in such a case, that surprise can be obtained. The first attacks may be met

with defensive measures and counter-attacks. The fear of such action might be sufficient to prevent the attack.

Let us add that in peacetime, even more than in war, the prior disposition of defense forces cannot make up for lack of information. It is impossible to place all the life and activities of a country underground permanently. Therefore, whatever may be the dispersion of the vital resources and of the armed forces of a nation, the risk still remains, in a surprise attack, of their being annihilated in a few days or weeks by a well-equipped aggressor.

In addition to being a defense against surprise, intelligence permits the development of national defense in its broadest sense. Elements of this defense include the conclusion of alliances, the organization of armed forces, development and execution of armament plans, economic planning, scientific and technical research, and the psychological preparation of the nation. All this must be done in the light of the lessons learned in the last war. For example, we may cite the interdependence of tactical concepts and technical studies. In war, tactical concepts and the material needs resulting from them determine the kind of technical studies that must be made. In peacetime, on the other hand, new technical discoveries or simple technical improvements can produce considerable modifications in the employment of the various arms. The perfection of radio made the *blitzkrieg* of the airplane-tank team possible. Intelligence permits us to maintain a lead in certain fields and to catch up in others.

Present conditions make this more evident than ever before. With strategic problems and the technical aspects of armament becoming increasingly complex, the time required for research is lengthened. Perfection of doctrine and matériel is a painstaking task and the manufacture of equipment takes much time. It took 7 years to construct and perfect the "flying fortress," which was only a perfected version of equipment already in use. This being the case, research should be assisted by intelligence. It is not reasonable to travel step by step the entire road which led to a certain discovery, if one or two of the stages can be eliminated by intelligence activity.

Even though the cost may be high, intelligence permits great savings. It permits the maintenance of smaller forces, avoids the manufacture of obsolete equipment, and prevents costly scientific research in fields which are already explored.

Intelligence is not a cure-all, but responsible leaders must believe in it and possess the will and the means to benefit by it. Even the best-informed government is incapable of keeping invasion and ruin from its country if it lacks adequate human or material resources.

But if an inferiority is not too great, intelligence permits an application of the principle of economy of forces.

Strategic Intelligence

We have attempted to show that a government must be informed in order to be able to make decisions as to the conduct of war, or to organize its national defense in peacetime.

At the beginning of the twentieth century, wars were concerned almost exclusively with armed forces. There were only two of these forces, the airplane being then unknown, and joint operations were rare. The problem of intelligence was therefore relatively simple, particularly for a country such as France which needed to be informed only about the intentions of immediate neighbors who might invade her national territory or threaten her sea routes. That amounted, in short, to a knowledge of the possibilities of the ground forces and the navies of the adjacent countries. This exclusively mili-

tary problem was solved by the military departments, which made direct contacts with their military attaches and secret service organizations. Such an organization sufficed for the purposes in view.

The total character of war and national defense has greatly modified the problem of intelligence. For total war, there must be total intelligence. This problem must therefore be reconsidered, present data defined, and a solution found which will best conform to French characteristics.

Who and what are the various agencies that require information for making decisions? According to most concepts, these agencies are in four distinct echelons:

1. That charged with the general organization of national defense or the conduct of war. In France, this is the President of the Council and the Committee of National Defense.

2. That charged with the direction of the armed forces or the direction of operations. This, again, is the President of the Council, assisted by a military committee.

3. That charged with putting into operation the decisions made by the high authorities mentioned above. These are the responsible ministers and, in time of war, the commanders of the theaters of operation.

4. That charged with the execution of the measures adopted or the orders given. This echelon includes scientific research workers, industrialists working for national defense, persons engaged in the dissemination of propaganda, and the commands of the large, medium, and small units of the three armed forces.

The information required by these various authorities becomes more general and sweeping in time and space the higher the authority is located in the chain of command. Inversely, the required information is more limited and specialized in the lower echelons.

This leads us to the second phase of the problem: the nature of information. In time of war, it is fitting to study the possibilities of the enemy in all areas. In peacetime, one should know as completely as possible the potentialities of eventual allies and enemies. In preparing for operations in the European Theater, the Allies established five categories of intelligence: political, economic, geographic, scientific, and military.

Political Intelligence

The political structure of a nation constitutes a potential intention about which it is necessary to have information. Autocratic governments are naturally given to an aggressive external policy for reasons of internal prestige. As a result, they are often dangerous to their neighbors. In democracies, on the contrary, public opinion is rarely disposed to prepare aggression and is even slow in becoming stirred in the face of threats from the outside. But once awakened, public opinion is difficult to calm. Those in charge of national defense should take into account these differences in their plans, with respect to both internal and external matters.

But the political structure itself is only one element of a wide range of political problems. True, it is largely colored by the individuals who are in power, by the principles of the majority parties, by the degree of training and political maturity of the people, by the intensity of religious feeling, and particularly by the spirit of each nation. It would be a mistake in estimating national potential not to take into account the critical temperament of the French people, which is the cause of a thousand dissensions in time of security but which disappears in favor of the common interest when danger appears. Similarly, there is the spirit of discipline and the gregarious instinct of the Germans, with their ideas of racial superior-

ity. There is the pragmatism of the Anglo-Saxons, sometimes concealed behind a mask of idealism or puritanism, but always backed by remarkable doggedness of purpose; and the patience of the Slavs, and their contempt for time and space and the individual.

Under the political label is information concerning history, language, religion, organization of the state and its parties, education, and propaganda. These factors evolve slowly and are difficult to translate into statistics or graphs. The objective understanding of them, however, often permits a solution if their human as well as their technical side is considered.

To this information of an external nature must be added internal information about the infiltration of foreign policies into the heart of the nation. These may be revealed in orders or advice given to certain parties, or in the corrupting effects of skillful propaganda.

Economic Intelligence

Information of an economic nature is no less important. Knowledge of production, distribution, and consumption in the interior of a nation permits one to determine its defensive and offensive potential. The evolution of economic factors such as rationing, purchase, or the storing of strategic raw materials, and their direction by governments, are almost certain indications of the intentions of governments. The employment of economic weapons, such as blocking or dumping, are also important indications. The field of logistics has assumed such importance that it cannot be neglected in the study of military possibilities. Logistics is closely conditioned by economics.

Large subdivisions of economic intelligence may be demography and social organization, resources of every type, methods and level of production, the monetary system and credit organization, transportation, and various systems of communication.

Scientific Intelligence

The search for scientific information has as its object the estimation of the possibilities offered each country by science in the field of national defense. To be sure, pure scientific research is disinterested. But there is only a short step between a discovery and its utilization. A knowledge of theoretical research and pure science gives a skillful interpreter an idea of how a foreign country may employ its technical assets. Biological studies indicate possibilities of biological warfare or protection against this form of warfare. Atomic warfare may be indicated by nuclear experiments. Radar and television are connected with progress in the field of electronics.

Therefore, it is important to know the emphasis that is being given to research in foreign countries, the appropriations and means placed at the disposal of the research workers, recent discoveries, and possible applications. This information also can be of use to one's own research workers, because the continuing threat of war since World War II has brought an end to the international character of pure scientific research.

Geographic Intelligence

In the case of geographic intelligence, we draw closer to the military field. It corresponds to a study of a theater of operations. But geography is too complex to be left to the military alone. Although geology, orography, meteorology, and topography influence strategical or tactical operations, the study of these elements is entrusted to highly specialized technicians.

Geographic intelligence is, of course, the complement of political intelligence, which it confirms and at times localizes.

Military Intelligence

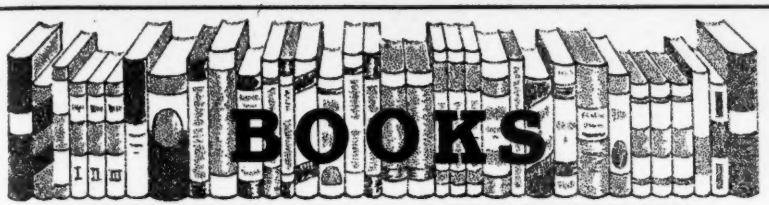
It hardly seems worth while to stress military intelligence, which is the most familiar of all. Nevertheless, it is well to make certain distinctions. On the one hand, there are the general problems of organization of the armed forces, military legislation, organization of the high command, strategic concepts, order of battle, possibilities of combined action, and information concerning the high command. On the other hand, there are the problems which are proper to each division of the armed forces, such as composition, armament, and tactical methods of large and small units.

A classification such as this brings out a secondary problem: the overlapping of activities of different branches of the intelligence service. For example, the number of atomic bombs being constructed is a concern of scientific intelligence and economic intelligence.

Likewise, the study of military air transportation, which is a function of military intelligence, encroaches on the field of economic intelligence, and (as regards ground installations and potential air fields) of geographic intelligence. It can be said that a rational exploitation of political and economic intelligence could have saved the United States the surprise of Pearl Harbor.

Before the age of air power, the defense of a strategic area was usually a matter of placing heavy guns to command its approaches and then confronting the attacker with superior fire power from protected positions. The Maginot Line was constructed on this theory. The areas strategically important to the exercise of air power, however, can be defended only to a limited degree by placing superior fire power in the form of interceptor aircraft and antiaircraft artillery to command the approaches to the strategic area. In World War II, it was clearly shown that a determined attacking force cannot be stopped short of its target. On many occasions, losses were inflicted that could have been prohibitive if they had been suffered over a sustained period, but air power showed itself always to be capable of reaching its objective and attacking it. While defensive air power can do much to minimize the effectiveness of an aerial attack, the present capabilities of air weapons do not alter this World War II lesson. The defense of the Arctic approaches to the United States, therefore, cannot rest solely upon fast interceptor fighters and the artillery that would help to defend their bases. The ultimate defenses available to the United States for protection from aerial attack from over the top of the world lies in the maintenance of a striking-force-in-being that could answer aerial aggression with a smashing retaliatory attack.

General Carl Spaatz



FOR THE MILITARY READER

OKINAWA: THE LAST BATTLE. By Roy E. Appleman, James M. Burns, Russel A. Gugeler, and John Stevens. 551 Pages. Historical Division, Department of the Army Special Staff; Superintendent of Documents, Washington, D. C. $6.00.

This first campaign volume in the Army historical series on World War II deals with one of the major battles of the war, and one in which the Army, Navy, Air Force, and Marines all played important parts. The account is based on detailed unit battle records and is written by experienced combat historians who collected much source material on the ground. Besides having all the American records and interviews with key commanders and staff officers at their disposal, the authors also had access to the official Japanese records concerning Okinawa.

BOUGAINVILLE AND THE NORTHERN SOLOMONS. By Major John N. Rentz, USMC. 166 Pages. Historical Section, Division of Public Information, Headquarters, U.S. Marine Corps, Washington, D. C. $1.50.

This is the fourth in a series of operational monographs on U.S. Marine operations in World War II. More than 5,000 documents were used in its preparation. The book develops the strategic background of the operation and the planning phase, and records in detail the combat operations of the 3d Marine Division. There is some material on the naval action off Cape Moltke, and the operations of the XIV Army Corps and the 37th and Americal Army Divisions.

THEIR FINEST HOUR. By Winston S. Churchill. Houghton Mifflin Company, Boston. $6.00.

Britain's Prime Minister during World War II began his history of the war with a volume entitled *The Gathering Storm.* It covered the period of the false peace, the outbreak of war, and the events up to the evacuation of Dunkirk. In *Their Finest Hour,* Mr. Churchill continues the narrative from the time he assumed the duties of Prime Minister in 1940. Of special interest to the military reader are the accounts of the Battle of France, the Dunkirk evacuation, the Battle of Britain, and the measures taken to rebuild the British Army. There is an account of the *Graf Spee* incident and the struggle to keep England's supply lines intact against the U-boat campaign. Wavell's campaign in North Africa, ending with the capture of Tobruk, is also recounted. Many of the private messages which Mr. Churchill sent to President Roosevelt are included.

DICTIONARY OF GUIDED MISSILE TERMS. By the Committee on Guided Missiles of the Research and Development Board, National Military Establishment. 57 Pages. Public Affairs Press, Washington. $2.00.

Here, for the first time, are listed and defined many of the terms that have originated as a result of recent scientific and military developments. Many of the terms are new and unique, but others are common words that have taken on special meanings.

ANNUAL REPORT OF THE SECRETARY OF THE ARMY, 1948. By The Honorable Kenneth C. Royall. 356 Pages. U.S. Government Printing Office, Washington. $0.70.

During the period covered by this report, 1 July 1947 to 30 November 1948, unification of the Armed Forces went into effect and the War Department became the Department of the Army. Besides unification, the report takes up the recent expansion of the Army, the civil functions of the Army in occupied areas, industrial mobilization, research and development, the 1948 reorganization, and many other subjects of importance to the postwar Army.

THE ARTICLES OF WAR. Annotated by Lee S. Tillotson, Colonel, USA (Ret.). 430 Pages. Military Service Publishing Co., Harrisburg, Pennsylvania. $3.00.

This fifth revised edition of the work originally published in 1942 includes the changes in the Articles of War up to 1 February 1949.

THE BISMARCK EPISODE. By Captain Russell Grenfell, Royal Navy. The Macmillan Company, New York. $3.50.

The sinking in 1941 of the German naval vessel, *Bismarck*, was one of major events of World War II. This is the story of the pursuit and engagement which ended in victory for the British Navy. The book provides a clear picture of the strategy and tactics of the engagement. Captain Grenfell is also the author of *Sea Power*.

MY LIFE IN THE RED ARMY. By Fred Virski. The Macmillan Company, New York. $3.50.

This is the account of the experiences of a young Pole who was drafted into the Soviet Army in 1940. It is the firsthand account of the life of a soldier in combat and labor units, and many of the experiences deal with the German attack on Russia in 1941.

EL ALAMEIN TO THE RIVER SANGRO. By Field Marshal The Viscount Montgomery of Alamein. 192 Pages. E. P. Dutton & Co., New York. $6.50.

Here General Montgomery gives the accounts of, and his observations on, the operations of the British Eighth Army from August 1942 to December 1943. The book thus covers the campaigns in Africa, Sicily, and Italy. Beginning with the Battle of Alamein, he develops the plan for each battle and then tells what happened in the actual operation. To this account, he adds his reflections on the tactics involved and on the factors that influence command decisions. Three chapters discuss the administration of the three campaigns. Seventeen colored maps are included.

JANE'S FIGHTING SHIPS, 1947-1948. Edited by Francis E. McMurtrie. 498 Pages. The Macmillan Company, New York. Illustrated. $20.00.

Publication of this new edition of the standard work on the Navies of the world marks the fiftieth anniversary of the founding of the book. New material of special interest includes data on Japanese warships of the *Yamato* class and the Soviet Navy. There is a special index showing all the important ships that have been listed by *Jane's* since 1897.

ECONOMIC GEOGRAPHY OF THE USSR. Edited by S. S. Balzak, V. F. Vasyutin, and Ya. G. Feigin. American edition edited by Chauncy D. Harris. 84 maps. The Macmillan Company, New York. $11.00.

This volume provides a detailed study of the economic resources of the Soviet Union. It was first published in 1940 and was used by the Germans as a source in locating many of the factories and industries in Russia. The book indicates the possibilities for economic development in Russia.